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Arthritis*

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TO COVER such a subject as has been assigned to me in a brief paper is manifestly impossible and with the literature so full of articles dealing with every aspect of chronic arthritis it is with a great deal of diffidence that I am going to outline some of the factors which particularly appeal to me as an orthopaedic surgeon and give you a very brief synopsis of the generally accepted concepts of the disease with its treatment. The basis for these remarks, aside from personal experience, will be largely the reports of the American and British committees for the study of arthritis and not the sporadic opinions or unproven contributions to etiology and treatment of individuals which are constantly appearing in our own journals and frequently in the lay press. With a disease so universal as chronic arthritis any person who devises a new "cure" and properly advertises it, be it from the laying on of hands and prayer to the most violent procedures, will gain a large following and, of course, "miraculous cures" will receive due publicity. Groups of the medical profession sometimes join in the hysteria following such announcements and we as individuals must be very careful to make use of our common sense and not be stampeded away from the scientific point of view. Too often the economic urge is the foundation upon which such therapy rests. Chronic arthritis clinics are frequently in charge of individuals who are riding a therapeutic hobby to the great detriment of the patients and also to the advance in arthritic knowledge and it is forgotten that this condition probably invades more branches of medicine than does any other disease and must of necessity be handled with a broad and balanced outlook.

It is probable that chronic arthritis is not a single disease entity but is a group of closely allied diseases with different etiologies but with chronic joint changes common to all. In spite of the attempts of some writers and investigators to show that the many and variable changes found in arthritis are merely different manifestations of one disease the mass of opinion still holds to the classification of cases into the two great groups called in this country the Atrophic and the Hypertrophic types. Undoubtedly the two types can be present in the same individual and mixed types are common but as yet there is no generally accepted evidence that one basic factor is present in all cases. Infection, either by bacteria themselves or their toxins, may be the cause in all types but certainly it need not be the same organism and the several manifestations could be the result of different reactions in biometrically different types of individuals. The classification into the two large groups, of course, cannot be dogmatized for although they have many sharp points of difference there are also many factors which are common to the two and no one can say that the distinction is so great that there is nothing in common in the etiology, pathology, clinical picture, or treatment.

A few words will refresh your memories on

*Read at the meeting of the North Dakota State Medical Association, Fargo, May 28-29, 1934.

the subject in general and on the differences between atrophic and hypertrophic arthritis and we can then pass on to the more specific points in therapy which I wish to emphasize.

As yet we must admit that we know no specific etiology for the chronic joint affections which are covered under the term chronic arthritis but all observers are sure that the condition is a systemic one and in the case of the atrophic type possibly due to some form of streptococcic infection.

The atrophic, rheumatoid, or proliferative type is characterized particularly by chronic inflammation in the synovial membrane and periarticular structures and by atrophy and rarefaction of the ends of the bones entering into the joints. There is thickening and proliferation of the synovial membrane with usually some increase in synovial fluid and gradual erosion of the articular cartilages by a pannus of granulation tissue. The end result tends to be a fibrous or bony ankylosis of the joints involved.

In contradistinction to this we have the so-called hypertrophic, degenerative or osteo-arthritis which starts as a degeneration of the hyaline articular cartilage, followed soon by the formation of chondro-osseous ridges and spurs especially around the articular margins. The synovial membrane undergoes practically no primary change and in the later cases the ends of the bones have become hard and eburnated although no adhesions or ankyloses have formed.

One of the most striking differences between these two major forms of arthritis is the age incidence and it has been said rightly that "in general, atrophic arthritis ends at an age when hypertrophic arthritis begins." Clinically the atrophic forms occur in the first half of life and particularly in women during the child bearing period and Still's disease in children must, of course, be classified here. The physical type of individual is usually of the slendor or so-called ptotic variety with flat chest, exaggerated lumbar lordosis and narrow costal angle, and many of them are under-weight and, in general, poor physical specimens. The condition starts slowly as a rule, although acute onsets are not uncommon, with prodomal symptoms of weakness, muscular wasting and vasomotor disturbances and then definite arthritic manifestations of swelling and pain begin, usually in the proximal interphalangeal joints of the hands. Many or all joints may become involved and on account of the disease plus the lessened bodily activities the general health declines and anaemia and other signs of lowered function occur. It is sometimes impossible to separate the primary from the secondary symptoms and findings and the whole complex tends to form one vicious circle. The crippling is frequently very marked and most persons suffering from this form of arthritis in the acuter stages are definitely bed-ridden or confined to a wheel chair.

The X-ray shows marked bony atrophy but normal contours until late in the disease and the synovial and periarticular thickening and swelling frequently show very clearly. Later on the destruction of joint cartilage is evidenced by thinning of the joint line and in late cases bony ankylosis may be apparent.

It is in this group of cases that so much work has been done bacteriologically and although the findings have been markedly divergent there is no doubt that nearly 90% of the patients will show the presence of streptococcus haemolyticus agglutinins in the blood, a finding which is strongly suggestive of a specific streptococcus as a definite etiological factor.

Hypertrophic arthritis occurs mainly in middle aged and elderly individuals, mostly men, who are apparently healthy otherwise but who often show arterial and other degenerative changes on examination and who in body type are more commonly the well nourished, sthenic individuals of stocky build. Infection is probably not primarily in question here. The clinical picture is familiar to you all. Discomfort and stiffness in one or more joints after rest with definite pain on overuse of the joints is noted from the beginning. Enlargement of the edges of the bones at the joints is present early and is more typical in the distal joints of the fingers where the so-called Heberden's nodes develop. The spindle shaped swelling of the proximal joints in atrophic arthritis is an entirely different picture. As the destruction of cartilage continues and the bony lips and spurs form around the joints definite limitation of motion occurs due largely to mechanical causes and what motion is present is accompanied by coarse crepitation. The hypertrophic hip, morbus coxae senilis, belongs to this group and is one of our common manifestations of the disease.

In the radiograph hypertrophic arthritis gives fairly definite findings. Very early we see sharpening of the articular margins followed later by definite osseous overgrowths and thinning of the joint spaces. In older, uncontrolled cases, there may be deformity of the articular ends of the bones, such as "mushrooming" of the femoral head, and not uncommonly cyst-like areas may be seen in the cancellous bone ends. The bony

overgrowths may be broken off and give rise to free joint bodies.

In the treatment of chronic arthritis there are certain measures which are common to both types although cases of the atrophic variety are by far the most difficult to handle and the prognosis in this group is poor as compared to the hypertrophic forms. Much can be done for them, however, and when the proper régime is carried out probably 70% of the cases will show marked benefit. The fundamental bases for successful treatment have already been suggested. Chronic arthritis must be handled as a systemic disease and, therefore, the individual as a whole must be treated and not merely the local manifestations. Over enthusiasm for one therapeutic measure must not blind one to the need of co-ordination of all forms of treatment of known value. Let us list the necessary procedures briefly:

1. General Measures.

Being a systemic disease, chronic arthritis must be primarily treated as such, each individual being considered as a whole, and every effort must be made to build up the patient's physical condition to as near normal as possible. This is particularly true of the atrophic type for here the patient must as a result give herself up at first entirely to the treatment, and to initiate this step is often the attending physician's most difficult task. In the big majority of cases better results can be obtained in patients coming from away for treatment than in those who live locally and cannot be separated from their routine of life, for complete rest in bed and the avoidance of all fatigue is the beginning of successful therapy. With this accomplished attention must be directed to the ptosis and intestinal stasis if present. The recumbent position may in some cases be sufficient but usually this must be supplemented by proper supervision of the diet, by exercise of the abdominal and other muscles, by general massage, and by the use of non-irritant laxatives. The diet need not be a routine one but should be well balanced and afford plenty of nourishment without being irritant or furnishing a medium for the growth of bacteria in the intestine. Plenty of fruits and fresh vegetables and the use of the coarser flours is indicated but meats and carbohydrates are allowed in smaller proportions than normally. Exercise and general massage should be started slowly and absolutely all tiring prevented. The circulation of atrophic arthritics is, of course, bad and will become worse with rest unless stimulated by breathing exercises of both the thoracic and, of much greater importance, the abdominal types and by systemic massage. Later postural exercises can be started with the patient in recumbency and gradually increased as sitting and standing are permitted. Favorable surroundings with plenty of fresh air and sunshine, the latter to be used as a direct therapeutic agent also, are, of course, essential and use must be made of all factors which will help put the mind at ease. A definite change of climate seems at times to be an important element.

2. The Use of Drugs and Vaccines.

Much has been written about both of these subjects, especially the latter, but the sum total of results from their isolated use is not very encouraging. There are no drugs, so far as we know, which are specific for arthritis and most of those used are merely to allay pain. Anemia, when present, must be treated with some form of iron and in certain cases the use of the iodides seems to be of benefit. On account of the lowered cystin content in the finger nails of some arthritics colloidal sulphur is being used at the present time and some excellent results have been published. Whether further studies will confirm these rather enthusiastic reports remains to be seen. Of the endocrines, only thyroid seems to have helped in some cases.

The vaccine treatment, except in the hands of the enthusiast, has been generally disappointing. Where the patient's blood is complimentary to certain strains of streptococci and autogenous vaccines can be made, they may be tried and even stock vaccines can be used but no unbiased evidence is at hand to prove that they exert any specific effect on the involved joints or on the disease in general. The Council on Pharmacy and Chemistry of the American Medical Association has not accepted any of the vaccines on the market but apparently no harm and possibly some benefit can result from their use, the only danger being that the other necessary therapeutic measures might be neglected. In the clinics where good results have been obtained with these agents the use of vaccines in small doses, given over a long period of time, is the method recommended and it is probably true that "too much vaccine will do the patient more harm than good." The use of foreign protein injections is still popular, and with good reason, for frequently it is of undoubted benefit and triple typhoid vaccine given in minute doses intravenously has been of great value in my own experience.

3. Local Treatment.

This heading covers many different factors and includes the more strictly orthopaedic measures which are so important but which are so frequently overlooked. In the more acute cases in

addition to the general rest already mentioned, it is essential that the inflamed joints be protected by light splints, circular plasters, traction, or, in milder cases, bandaging over wool or cotton padding. If great tension appears in a joint aspiration is indicated but under no circumstances should anything be injected into the joints. Fixation must not be prolonged and should be removed frequently as soon as possible to allow supervised motion and the application of other physiotherapeutic measures. The splinting or traction fulfills another important requirement and that is the prevention of deformity. The spine must be kept straight and the ribs flared as much as possible for if ankylosis occurs, and it frequently does, as you all know, the vital capacity should be held at any particular patient's highest level. A flexed, ankylosed spine with its accompanying stiffened and contracted thoracic cage is a factor in the vicious circle of the disease and the maintenance of good position will at least reduce the disability from the ankylosis. Shoulders should be kept in an abducted position of about 70° with slight forward flexion and external rotation so that maximum function is obtained by scapular motion in case of stiffening of the joints. Ankylosed elbows usually give the best function when near 90° but for occupational reasons this sometimes must be changed. Wrists should, of course, be moderately cocked-up and usually the forearm should be in mid-pronation although here again the occupation may require another position for maximum service. Hip joints, if ankylosed, have less disability if very slight flexion and abduction is present but anything more than this should not be allowed. In the knee a position between 10° and 20° from straight is the best and the ankle and foot should be kept in good weight-bearing position.

Local applications of heat to stimulate circulation is of vital importance and may be applied in any of the accepted forms depending on the reaction of the patient. Hot packs, baking, radiant heat, and diathermy all help although there are occasional patients who prefer cold applications and compresses for the relief of pain.

Massage above and below the affected joints increases the circulation, lessens the pain and frequently allows a greater range of movement. Active motion must be carried out several times each day to the point of tolerance but any severe joint reaction should be an indication for greater rest.

4. Removal of Foci of Infection.

It is hardly necessary at the present time to emphasize the elimination of septic foci in the body as it is probably the first move in the treatment of most cases. It should be kept in mind, however, that the earlier the infection can be relieved the better the results will be for little if any benefit will come when the arthritis is well established. The colon may be washed out once or twice a week by properly given mild irrigations if there is any indication of absorption at that point.

5. Special Procedures.

There are certain more special therapeutic factors which must be borne in mind but which, for lack of time, can only be mentioned. The correction of deformity is a large problem as unfortunately many cases are still allowed for various reasons to acquire contractures but the emphasis here must be on the prevention rather than the treatment of this disabling feature.

Sympathectomy has given relief to some individuals by increasing circulation and relieving pain but, of course, the underlying cause is not affected.

Synovectomy may be followed by rather brilliant results if the disease is so limited that such a procedure is feasible.

In hypertrophic arthritis the routine just reviewed may not be necessary in all its parts but the general principles of building up the individual to par must be observed and rest and mental ease are frequently vital factors. In these cases it is often necessary to reduce the weight and to take the strain from over-used joints. For this reason careful search for faulty statics and poor body mechanics should be made and the underlying condition corrected if possible. The shoes may need some modification to overcome pronation strain and the spine a support to prevent sagging and undue motion for a time. Hypertrophic joints are usually painful only on the extremes of allowed motion and they can, therefore, be protected by splints either of the rigid variety or with limited motion depending on the type of discomfort and the changes present.

In closing this somewhat rambling survey the main point which I want to re-emphasize is the general nature of chronic arthritis and the necessity for an extremely broad point of view in its therapy. Occasional apparently brilliant results from the use of some special treatment do not mean that the goal has been reached or that all other measures must be placed in the discard. Elimination of foci, the building up of the general health, correction of faulty body mechanics, the use of drugs for relief of pain, and of vaccines in certain atrophic types are still the therapeutic fundamentals we must always keep in mind.

A Statistical Survey of the Methods of Cross Indexing and Filing of Medical Records in Hospitals of One Hundred Beds or Larger*

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A CONSIDERABLE interest exists among hospital administrators of the United States to better the methods used in filing and indexing of hospital and clinical records. This interest has resulted in the installation of mechanical devices of different types which are of assistance to the record librarian in cross-indexing of clinical records and in the adoption or consideration of adoption of the Standard Classified Nomenclature of Diseases by many different hospitals.

In order to comprehend the actual status of the technique employed in the filing and indexing of patients' records, questionnaires were sent in July, 1934, to 1,899 hospitals of the country. The hospitals included all institutions with a capacity of 100 beds or over. The Minnesota questionnaires were sent to all hospitals, both large and small. The percentage of questionnaires returned and the percentage of the hospitals returning questionnaires to the total number of hospitals in each state are shown in Table I. It is evident that the percentage of questionnaires returned is somewhat lower throughout the southern states than it is in the northern ones. For the country as a whole, 50 per cent of the total questionnaires sent out were returned which represents about one-fifth of the total hospitals of the country.

TABLE I
PERCENTAGE RETURN OF QUESTIONNAIRE BY STATES

State	Questionnaires Returned	Questionnaires Sent Not Returned	Questionnaires Not Sent	Per Cent of Hospitals Returning Questionnaires	Per Cent Which Hospitals Returning Questionnaires Form of Total No. of Hospitals in State
Alabama	8	13	45	38	11
Arizona	3	12	35	20	6
Arkansas	8	5	45	61	14
California	71	37	167	66	26
Colorado	13	15	53	46	16
Connecticut	21	11	28	66	35
Delaware	5	0	7	100	42
District of Columbia	11	8	3	58	50
Florida	11	7	51	61	16
Georgia	5	17	70	23	5
Idaho	3	1	36	75	7
Illinois	44	78	143	36	17
Indiana	25	17	72	60	22
Iowa	20	14	95	59	15
Kansas	13	10	77	57	13
Kentucky	7	9	68	44	8
Louisiana	9	13	32	41	17
Maine	8	5	40	61	15
Maryland	19	22	26	46	28
Massachusetts	54	46	116	54	25
Michigan	34	29	128	54	18
Minnesota	88	82	0	52	52
Mississippi	1	13	51	7	1
Missouri	26	32	61	45	22
Montana	6	5	34	54	13
Nebraska	12	10	55	55	15
Nevada	0	2	12	0	0
New Hampshire	1	7	28	13	3
New Jersey	35	39	47	48	29
New Mexico	4	3	35	57	9
New York	102	136	230	43	22
North Carolina	10	14	102	42	8
North Dakota	4	5	30	44	10
Ohio	44	33	119	57	22
Oklahoma	9	6	89	60	9
Oregon	8	5	50	61	13
Pennsylvania	82	63	152	57	28
Rhode Island	7	6	11	54	29
South Carolina	4	6	39	40	8
South Dakota	5	2	43	71	10
Tennessee	13	11	58	54	16
Texas	21	30	197	41	8
Utah	7	0	19	100	27
Vermont	3	2	23	60	11
Virginia	11	18	60	38	12
Washington	16	16	62	50	17
West Virginia	4	13	51	24	6
Wisconsin	28	22	109	56	18
Wyoming	5	1	15	83	24
Total	948	951	3119	50	19

The form of the questionnaire is reproduced as follows:

1. Does your institution have a card file to locate the clinical record of the patients? Yes.....No..... If so, is it ordered by case number? Yes.....No..... By some other method? .....
2. Do you assign the same case number to the patient each time he is admitted to the hospital? Yes.....No..... To the Out-patient Department? Yes.....No..... Are the out-patient and hospital case numbers identical for the same person? Yes.....No.....
3. Are several patients' records bound together for filing? Yes.....No..... Or is each patient's record filed separately? Yes.....No..... If you file them separately, do you file together for the same patient the records of all his admissions to the hospital? Yes.....No..... To the Out-patient Department? Yes.....No..... To both the hospital and Out-patient Department? Yes.....No..... Are the clinical records filed by case number? Yes.....No..... By name? Yes.....No..... By date? Yes.....No..... By diagnosis? Yes.....No..... In any other manner?.....
4. Does your institution keep any sort of centralized cross index of case histories? Yes.....No..... If it does, what are the categorical groupings under which cases are cross indexed? Diagnosis? Yes.....No..... Anatomy? Yes..... No..... Treatment? Yes.....No..... Surgery? Yes..... No..... Attending physician? Yes.....No..... Other method? .....
5. Does the cross index follow any published nomenclature? Yes.....No..... If so, give the name of the nomenclature..... Has your staff

*Paper No. 4, Minnesota Hospital Statistical Bureau.
†Director, University Hospitals.

decided to adopt the National Standard Classified Nomenclature of Disease? Yes.....No..... If not, is it considering the possibility of doing so? Yes..... No.....

6. How is the cross index file kept? In books? Yes.....No..... On sheets? Yes.....No..... On cards? Yes.....No..... Is a mechanical system used such as the Findex system, the International Business Machines (Hollerith) or Powers Tabulating Machines? State which.....

7. For what is the cross index used? Location of case histories for research investigation? Yes.....No..... Tabulation of statistics of diagnoses? Yes.....No..... Surgical procedures? Yes.....No..... Other purposes.....

8. Have you issued any reports which required the use of the cross index system? Yes.....No..... If any have been published, please give a reference to a typical example.....

Certain basic facts with reference to each of the hospitals returning these questionnaires were obtained from the Journal of the American Medical Association, Number 13, Volume 102, March 30, 1934. These facts concern the types of service, types of control, bed capacities, bassinets, births, average number of patients per day, number of patients admitted to the hospital, number of patients in the Out-Patient Department, and are shown in Table II. Obviously the bulk of the hospitals are "general" in type with "tuberculosis" and "mental" numbering exactly 94 each. About one-fourth of the institutions are church controlled, a third independent hospital associations, and somewhat over a third are controlled by city, county, state or United States. The institutions selected were over 100 beds in capacity except for the state of Minnesota, in which all hospitals were questioned and except for certain institutions under 100 beds in size which had large Out-

TABLE II

FREQUENCY DISTRIBUTION OF THE CHARACTERISTICS OF HOSPITALS ANSWERING QUESTIONNAIRES

TYPE OF SERVICE

Cancer	1
Cardiac	2
Children	13
Epileptic	5
E. E. N. and T.	6
General	666
General and Tuberculosis	11
Industrial	7
Isolation	2
Maternity	8
Maternity and Children	2
Mental	94
Nervous and Mental	18
Orthopedic	10
Skin and Cancer	1
Tuberculosis	94
Tuberculosis and Isolation	3
General and Orthopedic	1
Mental and Tuberculosis	1
Sk. Ca. and E. N. T.	1
Leprosy	1
Gynecology	1
Total	948

TYPE OF CONTROL

Church	222
City and County	16
County	78
Federal	3
Fraternal	7
Independent	335
U. S. Department of the Interior	4
Individual	19
Industrial	8
Partnership	5
U. S. Public Health Service	13
Veterans Administration	42
State	136
Army	4
Navy	8
City	48
Total	948

BED CAPACITY

(100s)	
0	100
1	377
2	185
3	77
4	43
5	26
6	16
7	12
8	8
9	8
10 and over	96
Total	948

BASSINETS

None	331
1-49	548
50-99	59
100-149	5
150-199	2
200-249	3
250-299	..
Total	948

BIRTHS

(100s)	
None	351
0	68
1	80
2	93
3	85
4	71
5	49
6	34
7	26
8	24
9	14
10 and over	53
Total	948

AVERAGE NUMBER OF PATIENTS PER DAY

0-49	132
50-99	262
100-199	269
200-299	85
300-399	40
400-499	29
500-599	13
600-699	11
700-799	9
800-899	7
900-999	7
1,000 and Over	84
Total	948

NUMBER OF PATIENTS ADMITTED TO HOSPITAL

(1,000s)	
0	282
1	148
2	178
3	110
4	83
5	58
6	18
7	17
8	16
9	10
10 and Over	28
Total	948

NUMBER OF PATIENTS IN OUT-PATIENT DEPARTMENT

(1,000s)	
None	386
0-9	441
10-19	62
20-29	31
30-39	12
40-49	6
50-59	4
60-69	1
70-79	2
80-89	1
90-99	0
100 and Over	2
Total	948

Patient Departments. Consequently, only one-ninth of the hospitals which answered the questionnaire were smaller than a bed capacity of 100. Five hundred sixty-two, or 59 per cent, of the institutions had Out-Patient Departments of some type.

Before the problems of cross-index in medical records can be solved, certain prerequisites are essential in the methods of filing and numbering the clinical records. The first of these is to establish a card file which facilitates the location of the patient's record, and after such a card file is established, to consider the manner in which it is arranged. As indicated in Table III, nine per cent

TABLE III

PRESENCE OF CARD FILE TO LOCATE PATIENT'S RECORD AND MANNER OF ITS ARRANGEMENT

Without card file to locate patient's record	82 (9%)
With card file to locate patient's record	866 (91%)
Card file ordered by case number	625 (78%)
Card file not ordered by case number	241 (28%)
Total	948

of the 948 institutions were without any such card file whatsoever. Of the 91 per cent which did have a card file, 78 per cent were ordered by case number and 28 per cent by some other method.

The next most essential prerequisite to a cross-index of medical records is the manner in which repeated admissions of the same patient are assembled in the record files. Table IV gives an indication of exactly how this is carried out in

TABLE IV

REASSIGNMENT OF CASE NUMBER TO SAME PATIENT ON READMISSION TO HOSPITAL OR OUT-PATIENT DEPARTMENT

	Same Case Number Assigned Patient on Readmission	Not Same Case Number Assigned Patient on Readmission	Total	Per Cent Assigning Same Case Number
Hospital without Out-patient Department	98	288	386 (41%)	25%
Hospital with Out-patient Department	184	378	562 (59%)	33%
Total	282 (30%)	666 (70%)	948	30%

$X^2 = 5.92$ $P = .01$

	Same Case Number in Hospital on Readmission	Not Same Case Number in Hospital on Readmission	Total
Same case number in Out-patient Department on readmission	139 (25%)	140 (25%)	279 (50%)
Not same case number in Out-patient Department on readmission	45 (8%)	238 (42%)	283 (50%)
Total	184 (33%)	378 (67%)	562

those institutions answering the questionnaire. In 282 hospitals, approximately one-third, the same case number was assigned a patient on readmission, thus creating an identity number for the individual. This practice is essential for the introduction of a sound mechanical system of cross-indexing. Twenty-five per cent of the hospitals without Out-Patient Departments assign the same case number on the readmission of the patient, while 33 per cent of the hospitals with Out-Patient Departments use the same case number each time the patient is readmitted. The difference of eight per cent is a statistically significant one. In the 562 institutions which have Out-Patient Departments, the same case number is assigned to the patient upon readmission both to the hospital and to the Out-Patient Department in 25 per cent of the time. In 42 per cent of the institutions, an identity number is not used for either the hospital or the Out-Patient Department. This means that there is a task of magnitude facing hospitals of the country in the re-assignment of the case numbers of their records so as to establish the case number as an identity number for the patient.

The actual filing of the patient's record is handled very much better in the large hospitals of the country than is the matter of their cross-indexing or the assignment of case numbers. Only seven per cent of the institutions are involved with a system which binds in book form the records of one patient to those of another. The principal institutions which still engage in this practice are those involved with mental cases. Of the 879 institutions which file the patient's record separately from those of other patients, 29 per cent engage in the practice of filing separately each admission of the patient to the institution, an inefficient practice which necessitates assembling all the records of each admission from various places in the files each time the patient is investigated.

TABLE V

MANNER OF FILING PATIENTS' RECORDS

Record of patient bound with those of other patients	69 (7%)
Record of patient filed separately from other patients	879 (93%)
Hospitals without Out-patient Departments, records of readmission filed together	217 (25%)
Hospitals with Out-patient Departments, records of readmission to hospital *or* Out-patient Department filed together	186 (21%)
Hospitals with Out-patient Departments, records of readmission to hospital *and* Out-patient Department filed together	224 (25%)
All hospitals with records of readmission filed separately	252 (29%)
Total	948

Twenty-six per cent of the institutions have no central cross index of the patients' records. Of

the 74 per cent which do have a central cross index, 80 per cent are kept on cards, 10 per cent on sheets or books, and 10 per cent in some combination of cards, sheets or books.

TABLE VI
CENTRAL CROSS-INDEX OF PATIENTS' RECORDS

No central cross-index	242	(26%)
Central cross-index	706	(74%)
Kept on cards	567	(80%)
Kept on sheets	24	(4%)
Kept in books	44	(6%)
Kept in some combination — cards, sheets, books	71	(10%)
Total	948	

Nomenclature both for medical and surgical terminology is a most essential and very much disputed subject among hospital administrators. Table VII demonstrates the facts gathered in this

TABLE VII
TYPES OF NOMENCLATURE USED BY HOSPITALS

Type of Nomenclature Used (In Place of or in Addition to Standard Classified)	Standard Classified Not Adopted Nor Under Consideration		Standard Classified Adopted		Standard Classified Being Considered for Adoption		Total	
	No.	% of Total	No.	% of Total	No.	% of Total	No.	% of Total
No Nomenclature	259	40	0	..	162	66	421	44
Mass. General	90	13	4	7	27	11	121	13
Ponton's	79	12	9	17	17	7	105	11
Bellevue's	76	12	8	15	11	5	95	10
Mercur's	45	7	9	16	9	4	63	7
Lambert's	13	2	1	2	8	3	22	3
Veterans Adm.	12	2	1	2	1	0	14	1
U. S. Phys. Health S.	24	4	9	16	..	0	33	4
International	8	1	3	6	2	1	13	1
Univ. of Calif.	10	2	1	2	2	1	13	1
Natl. Tuberculosis	3	0	1	2	..	0	4	0
Mental and Psych.	4	1	6	11	2	1	12	1
Royal Col. of Phys. and Surg.	..	0	1	2	..	0	1	0
Miscellaneous	27	4	1	2	3	1	31	4
Total	650 (69%)	100	54 (6%)	100	244 (25%)	100	948	100

questionnaire on the subject of nomenclature. Three columns appear in the table—the first contains those institutions which have not adopted or considered the adoption of the Standard Classified Nomenclature of Disease; the second, those which have adopted the Standard Classified Nomenclature of Disease, and the third those which have the adoption of the Standard Classified Nomenclature of Disease under consideration. It is interesting that 44 per cent of all institutions have no nomenclature whatsoever and that 66 per cent of the institutions which are now considering the Standard Classified Nomenclature of Disease for adoption have no nomenclature at the present time. Apparently, practically all institutions which have adopted the Standard Classified Nomenclature of Disease are trying out this nomenclature and still retaining the nomenclature previously used. Of the nomenclatures in actual use, the Massachusetts General, Ponton's and Bellevue's are about equally distributed among the institutions answering this questionnaire. It is an amazing commentary that there are so many institutions of over 100 beds in size that admit to having no nomenclature whatsoever. It is also interesting to note that only one institution in the entire list which returned questionnaires has attempted to use the nomenclature of the Royal College of Physicians and Surgeons.

Even though the picture of the present status of the filing and cross indexing methods used in connection with clinical records in hospitals is not an encouraging one, it is a considerably better picture than if the questionnaires had been obtained on both large and small institutions. In order to check the results of the analysis which was made on institutions of over 100 bed capacity, a corresponding study of all institutions in the state of Minnesota, both large and small, is reported in Table VIII. Fifty-two per cent of the

TABLE VIII
COMPARISON OF LARGE AND SMALL HOSPITALS IN MINNESOTA

	100 Beds or Over	Under 100 Beds	Total
Number answering questionnaire	32 (86%)	56 (42%)	88 (52%)
Number having card file to locate patient record	31 (97%)	38 (68%)	69 (78%)
Same case number assigned patient on re-admission to hospital	19 (59%)	9 (16%)	28 (32%)
Record of patient filed separately from other patients	30 (94%)	54 (96%)	84 (95%)
Records of readmission filed separately	10 (33%)	24 (44%)	34 (40%)
Central cross-index of patients' records	29 (91%)	20 (36%)	49 (56%)
No nomenclature used	8 (25%)	39 (70%)	47 (53%)

questionnaires were returned in the state of Minnesota. Of those returned, 32 were involved with institutions of 100 beds or over in size and 56 with institutions of smaller size. Of the larger institutions, a return was made on 86 per cent and of the smaller ones only 42 per cent. In the matter of assigning identity numbers to the patient, as well as keeping this identity number on various readmissions to the hospital, a factor which is essential for good cross indexing, the large institutions were very much better than the smaller ones. When it comes to the matter of filing records, the large and small institutions apparently function with approximately the same degree of efficiency. The large institutions have a very much higher percentage of central cross indexes than the smaller ones. Only 25 per cent of the larger institutions do not use any nomenclature as compared with 70 per cent of the smaller ones. If this difference between small and large hospitals, which exists in Minnesota, is consistent

throughout the country as a whole (and there is no reason to believe that it does not represent a corresponding condition elsewhere), the questionnaire study as reported in this paper would represent a condition of filing and cross indexing of records very much poorer than the present one reports.

The following list of institutions has been assembled through the questionnaire study as those possessing a special indexing equipment:

INSTITUTIONS POSSESSING SPECIAL INDEXING EQUIPMENT

State	*City*	*Institution*	*Equipment*
California	Norwalk	Norwalk State Hospital	International Business Machine
California	Palo Alto	Veterans Administration Facility	Kardex
California	San Francisco	St. Francis Hospital	Y & E Index
Colorado	Denver	National Jewish Hospital	Visible Index System
Colorado	Woodmen	Modern Woodmen of America Sanatorium	Kardex
Connecticut	Bridgeport	St. Vincent's Hospital	Findex
Connecticut	Hartford	St. Francis Hospital	Kardex
Florida	Miami	Dade County Hospital	Findex
Illinois	Chicago	University of Chicago Clinics	International Business Machine
Illinois	Chicago	Chicago Lying-in Hospital	International Business Machine
Illinois	North Chicago	Veterans Administration Facility	Questionable
Illinois	Granite City	St. Elizabeth Hospital	Kardex
Indiana	Ft. Wayne	St. Joseph's Hospital	Y & E Index
Indiana	Indianapolis	Indiana University Hospital	Y & E Index
Indiana	Indianapolis	Methodist Episcopal Hospital	Expandex
Indiana	Indianapolis	Veterans Administration Facility	Powers
Indiana	Evansville	Protestant Deaconess Hospital	Findex
Iowa	Iowa City	University Hospitals	Under Consideration
Kansas	Topeka	Topeka State Hospital	Kardex
Kansas	Topeka	Security Benef. H. & H.	Findex
Massachusetts	Boston	Children's Hospital	Findex
Michigan	Ann Arbor	University Hospitals	International Business Machine
Michigan	Detroit	City of Detroit Receiving Hospital	Kardex
Michigan	Detroit	Herman Kiefer Hospital	Powers
Michigan	Eloise	Eloise Hospital for Ment.	Powers
Michigan	Ironwood	Grand View Hospital	Findex
Minnesota	Ah-Gwah-Ching	Minnesota State Sanatorium	International Business Machine
Minnesota	Brainerd	St. Joseph's Hospital	Findex
Minnesota	Minneapolis	University Hospitals	International Business Machine
Minnesota	Rochester	Colonial Hospital	International Business Machine
Minnesota	Rochester	St. Mary's Hospital	International Business Machine
Minnesota	Rochester	Worrall Hospital and Annex	International Business Machine
Minnesota	St. Paul	Mounds Park Sanatorium	Findex
Montana	Warmsprings	Montana State Hospital	Kardex
Missouri	St. Louis	Evangelical Deaconess H. & H.	Kardex
New Jersey	Jersey City	Margaret Hague Maternity	International Business Machine
New Jersey	Cedar Grove	Essex County Hospital	Kardex
New Jersey	Jersey City	Jersey City Hospital	Under Consideration
New Jersey	Trenton	New Jersey State Hospital	Kardex
New York	Albany	Albany Hospital	Flexosite
New York	Brooklyn	Greenpoint Hospital	International Business Machine
New York	New York	Beth David Hospital	International Business Machine
New York	New York	Department of Hospitals, City of New York	International Business Machine
New York	New York	Neur. Institute of New York	Kardex
New York	New York	Park East Hospital	Kardex
New York	Jamaica	Mary Immaculate Hospital	Y & E Index
New York	Rochester	Strong Memorial Hospital	Under Consideration
New York	Syracuse	Syracuse Memorial Hospital	Y & E Index
New York	Utica	Faxton Hospital	Questionable
New York	Valhalla	Grasslands Hospital	Kardex
North Dakota	Bismarck	Bismarck Hospital	Kardex
North Dakota	Fargo	St. John's Hospital	Y & E Index
Oregon	Portland	Dr. R. C. Coffey Clinic and Hospital	Findex
Pennsylvania	Easton	Easton Hospital	Findex
Pennsylvania	Philadelphia	Hospital of the University of Pennsylvania	Kardex
Pennsylvania	Pittsburgh	Allegheny General Hospital	Kardex
Texas	Sanatorium	State Tuberculosis Sanatorium	Kardex
Washington	Tacoma	Pierce County Hospital	Y & E Index

The fact that these institutions have worked with some one of the various mechanical systems does not mean that the adaptation of the equipment to the cross indexing problem is adequate in them. However, it seemed desirable to submit such a list to the hospital administrator who might wish to install some such mechanical system himself.

Conclusions

1. A statistical picture has been given of the existing status of the manner in which records are filed and cross indexed together with the type of nomenclature which is used in hospitals of 100 beds and over in size.

2. An identity number for the individual patient is an essential element in any adequate cross-indexing plan and at the present time it exists in only about one-third of the institutions answering the questionnaire. Filing the patient's record should follow the unit system and all readmissions of the same patient to the institution should be filed together. At the present time about one-third of the institutions of over 100 beds in size do not follow this plan.

3. Forty to forty-five per cent of the hospitals, a surprisingly large number, are following no nomenclature plan whatsoever. The Standard

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Eclampsia*

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ECLAMPSIA has been recognized since the time of Hippocrates, who mentions the convulsions of pregnant women, and who knew that they most often occurred in women who had headache and a tendency to sleep. The word, itself, means to flash or to shine out. In spite of the fact that this condition has been known for centuries, we to this date remain unenlightened as to the actual cause. When we speak of eclampsia, we are, therefore, referring to the symptom rather than to the disease, for various underlying diseases may be present. In the course of the disease, before we encounter the symptom of eclampsia, we usually encounter a preceding one which we will call pre-eclampsia, or the pre-eclamptic state. It is during this state that the woman is said to be threatened with convulsions, and it is during the stage of eclampsia that she develops the convulsions.

DeLee in his sixth edition has devised a classification of the disease under consideration. This classification decidedly clarifies the hazy conception which we have of eclampsia. Let me review this classification:

*Read before the joint meeting of the Sixth District Medical Society and North Dakota State Health Officers Association at Bismarck on April 30, 1934.

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I

Types	*Pathology*	*Clinical Characters*	*Late Course*
"Hepatic" Eclampsia: Pure eclampsism, i. e., the particular toxic state which underlies the convulsions and coma of late pregnancy.	*General:* Tissue changes. Angiospasm. Edema, etc. *Liver:* Focal necroses. Thrombi. Lobular degeneration, peripheral. Acute yellow atrophy. *Kidney:* Kidney of pregnancy. Nephrosis. Nephropathia gravidarum. Acute glomerulonephritis.	*Edema,* moderate. *High blood-pressure,* at first moderate, but mounts fast. *Symptoms:* (Late in pregnancy and stormy.) Headache. Epigastralgia. Special senses, amaurosis, etc. *Urine:* (Findings late and quickly ominous.) Oliguria. Albumin. Casts. Red and white blood cells. Bile. Indican. *Icterus* and bilirubinemia. *Convulsions,* after brief warnings. *Coma,* after brief warnings. *Blood,* hyperglycemia; CO_2 reduced. *Eyes:* Edema retinae, spasm of vessels. *Baby,* usually lives; if dies, instant improvement.	Recovery usually complete. Death in coma. Child usually lives. Rarely recurs. Amaurosis cured.

II

Types	*Pathology*	*Clinical Characters*	*Late Course*
"Nephritic" Eclampsia: Acute nephritis with eclampsism.	*General:* Tissue changes. Angiospasm. Edema. *Kidneys:* Toxic. Kidney of pregnancy. Nephrosis. *Focal Infection:* Acute glomerlonephritis. Nephritis. Pyelitis. Tonsillitis. Tooth abscesses. Acute infectious diseases. Exposure. Poisonings. *Liver:* Late, when eclampsism is added.	*Edema,* marked. *High-blood pressure,* mounts slowly to high figure. *Symptoms:* (Earlier in pregnancy, progressive, then suddenly ominous.) Headache. Special senses, amaurosis. Epigastralgia. *Urine:* (Findings early and progressive.) Albumin. Casts. Red and white blood-cells. Oliguria late. *Convulsions and Coma:* (Both slow to follow first symptoms.) Eclampsism. Uremia. *Blood:* Chemistry equivocal, late it shows N retention. *Eyes:* Neuroretinitis, abruptio retinae, etc. *Baby,* if dies, subsidence.	Recovery usual. Not seldom a chronic nephritis remains. Will recur if the cause of nephritis is not removed. Some kidneys are supersensitive to pregnancy toxins. Baby often dies. Nephritis may recur without eclampsism.

III

Types	*Pathology*	*Clinical Characters*	*Late Course*
Chronic nephritis with or without eclampsism.	Latent nephritis. Chronic nephritis *with* Eclampsism = Acute nephritis (above) *without* Eclampsism = Dead fetus. Placenta albumenurique. Cardiac, Renal, Vascular } Decompensation. Retinitis albumenurica.	*Evidences* early in pregnancy. *Edema,* anasarca late. *High blood-pressure,* early. *Symptoms:* Mild unless eclampsism added, then Headache. Amaurosis. Convulsions. Coma. *Urine:* Usual findings and early. (If acute nephritis supervenes, they are identical with II.) *Blood,* N retention. Heart findings. Eclampsism. Abruptio placentae. Abruptio retinae. Retinitis albumenurica. Apoplexy. *Baby,* often dies; improvement slow.	General disease aggravated permanently. Vessels. Kidneys. Retina. Almost always recurs in subsequent pregnancy, earlier and worse. ("Low reserve kidney.") It is the underlying cause of obstetric complications: Abortion. Premature labor. Dead fetus (macerated). Abruptio placentae. Obstetric shock.

IV

Types	*Pathology*	*Clinical Characters*	*Late Course*
Essential hypertension with or without eclampsism.	*Cardiorenal vascular disease,* carried into pregnancy. *Focal Infection:* *With* eclampsism: Kidney lesions. Liver lesions. *Without* eclampsism: Hemorrhagia cerebri. Death of fetus. Cardiorenal, Vascular } Failure.	*High blood-pressure,* early in pregnancy. History. *Symptoms:* Mild. Late and suddenly stormy when eclampsism is added. *Urine:* Findings unimportant until: Eclampsism. Kidney defaults. *Blood:* Negative until kidney defaults. *Baby,* if dies, only slight improvement. After delivery, slow improvement. Without eclampsism same as III.	Continues between pregnancies. Late, symptoms of cardiorenal-vascular disease appear. Is aggravated by each pregnancy. See No. III.

The above classification has aided us innumerable times in our treatment, but probably more so in the prognosis given to the patient or relative. What are the chances of the patient's surviving? Will we obtain a living infant? May we expect the maternal organism to completely regain its previous well-being and vigor? Segregating our cases into the above classification will answer these questions quite definitely.

Causation

In spite of the enormous amount of study that has been put upon it, the real cause of this affection is unknown. Theories too numerous to discuss have been advanced. Briefly, we will mention a few of the most divergent of them.

The theory that has the most plausibility is that eclampsia is one form of toxemia, causing perversion of a physico-chemical nature, and that some noxa circulates in the blood which upsets the water-balance, effects liver changes, and, directly or secondarily, degenerative changes in the kidneys and also convulsions by direct toxic action on the anterior cerebral cortex.

Where do these toxins originate?

Let us consider briefly a few:

Halbertsma believes that the uterus by compressing the ureters produces, thus, a urinemia. This is disproved by the fact that dilatation of the ureters is not the rule in eclampsia, and often occurs in healthy women.

Delore suggested that bacteria might be the cause of eclampsia. The frequency of sepsis after eclampsia, the febrile nature of the disease, the fact that it may follow an attack of tonsillitis, that it occurs often in cold and damp weather, would argue for an extraneous microbic origin. However, up to the present time no one has been able to isolate a germ which could be considered as causing it.

Then, regarding dietetics—that diet has something to do with the causation of eclampsia seems to be proved by the war. Fats and animal proteins were almost eliminated from the diet of German women and the incidence of eclampsia declined more than fifty per cent.

Bouchard, in 1887, broke new ground when he advanced the theory that eclampsia results from an accumulation of retained waste. Then, the liver was accused. Bernard argued that eclampsia was due to liver insufficiency. Dieckmann proved that the blood in eclampsia is concentrated and recommended glucose and gum acacia as diluents.

Lange believed that the thyroid gland had much to do with eclampsia. The administration of thyroid extract has given favorable results, but the treatment has not been accepted generally. Practically all of the other glands of internal secretion have been accused of taking a part in this disturbance. It is known that the urine of

eclamptics used for the Ascheim-Zondek test kills the mice.

Numerous investigators have tried to find a toxin in the placenta, but Frankel, in summing up their efforts and his own, decides that there are no toxins in the placenta, but that there may be ferments, and that this line of study will more likely lead to useful results.

Let us consider briefly the cause of the actual convulsion. Here, again there is much room for speculation. We realize that the nervous system of the pregnant woman is in a state of hyperexcitability. Dührssen explains the convulsion as due to a spasm of the blood vessels of the brain, the liver or the kidneys, from an irritation proceeding from the uterus. Spasm of the blood vessels of the brain causes an acute edema and edema may evoke the fits. The angiospasm during the convulsion may be easily demonstrated by the capillary microscope. Zangemeister defends the theory that increased intracranial pressure causes the convulsions and all the symptoms, there being an edema of the brain similar to that occurring in other parts of the body, the legs, hands and eyelids. This latter is a very plausible theory and becomes more evident because of the beneficial results obtained when the treatment is directed toward this edema.

Treatment

Generally, the methods of treatment can be divided into two groups, namely, the conservative treatment as is well exemplified by the methods of Stroganoff; and the radical treatment. That there is merit to the conservative treatment is proven by his last series of 230 cases with a maternal mortality rate of 1.7 per cent. His previous series had a mortality rate of 9.8 per cent. Statistics gathered at random and embracing various types of treatment still show a mortality rate of six to forty-five per cent for the mother and twenty to sixty per cent for the child. Stroganoff's death rate is the lowest of any recorded.

Sweifel was an advocate of the rapid delivery method, or as we might say, the radical treatment, but he has become converted to the Stroganoff method.

Stroganoff belives that the disease is self-limited. If the patient is not delivered during his course of treatment, there is usually an improvement in the symptoms, and labor is instituted during the phase of improvement.

During recent years Dieckmann, formerly of St. Louis and now of Chicago, advocated the use of magnesium sulphate and hypertonic glucose solution. Aside from the many other details of the treatment involved, we are more particularly interested in this therapy. The treatment is rational when we consider the symptoms and pathology.

Titus has proven that the blood sugar in an eclamptic patient is low. Administering a hypertonic glucose solution—that is, 1,000 c.c. of 20 per cent glucose solution—will supply the system with sugar for its depleted storehouse. The amount which is given in excess of the demand will cause a glycosuria. The glycosuria, in turn, will create a polyuria. Thus, the edematous tissues will be relieved of their fluids. It is, therefore, our purpose to give enough glucose to produce a glycosuria and in that way initiate a diuresis. In the normal individual 500 c.c. of a 20 per cent solution of glucose, when given over a period of sixty to ninety minutes, will not produce a glycosuria, but if given in thirty to fifty minutes, it will result in 10 to 30 grams being excreted in the urine. Therefore, the 1,000 c.c. solution is given over a period of thirty to fifty minutes, resulting frequently during the administration in urination or the desire to void. Once the diuresis is initiated, it will usually continue, with decided benefit to the patient.

The other substance of our armamentarium is magnesium sulphate. It is believed that this decreases intracranial pressure and is also a sedative. The usual method of procedure is to give 10 c.c. of a 25 per cent solution intramuscularly. Thereafter, 5 to 10 c.c. are given after each convulsion. Magnesium sulphate is given into the muscle in preference to the intravenous route, the latter being too dangerous because of its depressant action on the respiration. Some obstetricians prefer not to give the magnesium sulphate while the patient is in a coma. We have used it during that time and have found no bad results.

It is believed that the use of magnesium sulphate and hypertonic glucose solution is indicated in the treatment of every eclamptic patient, regardless of the other methods or adjuncts of treatment that are used.

In the last three years we have had fourteen eclamptic patients and twenty-seven pre-eclamptic cases under our observation. In this series there were no maternal deaths. Of the total forty-one late toxemias delivered, there were ten fetal deaths or a fetal mortality of 20.8 per cent.

Conclusions

1. The proper diagnosis of the various types of eclampsia will give much information regard-

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What the University Expects from The Student Health Service

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HEALTH, physical and mental, is the first prerequisite to satisfactory living; it is necessary to success in any field. This necessity of health should not be impugned by the occasional citation of instances of a genius who was notable for poor health. How much greater he might have been had he possessed health. It is also true that satisfactory living results in the enhancement of health.

Health is no longer to be conceived as merely a physical matter. The emotions and the physiology of the body are so interrelated that neither can safely be dealt with alone. We know relatively little about the care of mental health at the present time, but we do know that mental health is important and we do know that our knowledge of this phase of health must increase.

Both phases of health need special care in college. College life is inevitably a life of physical and mental strain. Parental watchfulness is gone. The strains of competition in the intellectual, social, and physical field drain energy. The lack of regular sleep, special demands on eyesight, the general inclination toward spasmodic intensity all make for physical ill health. Here is one responsibility the Health Service must accept. College is essentially a mental experience and a very considerable number of college students are under some degree of mental depression. Of these there is a small percentage who need the best psychiatric help. The Health Service should supply this help and it should be freely accessible to the student and should be sought by him just as simply and naturally as help for a physical malady.

The health program in most colleges is commendably well organized in respect to what is commonly called physical education, and in a large number of our best colleges and universities it is well organized in respect to clinical service to students. But health programs in the majority of our schools are lacking in respect to the more fundamental and lasting values of *preventive medicine* and *education*. To be sure the immediate clinical care of the sick student seems to demand first attention and from the point of view of the student is the most popular and valuable phase of the Student Health Service. Because of the popularity of this phase of the work it is very apt to take the center of the stage and crowd out the more permanent values to be derived from preventive medicine in its broad sense. The college would do well to develop instruction in the prevention of illness and in mental and social hygiene to as great an extent as it has developed physical education. Individual conferences with students should play an important role in this teaching of personal preventive medicine and mental hygiene, of course.

One of the most important qualities of the ideal health program is its insistence on individual interest and care. The initial individual physical examination should be only the first of a series of personal conferences leading not only to the correction of physical defects and faulty health habits, but to a more positive and aggressive interest on the part of the student in using his health knowledge. These personal conferences should, of course, include, simply and naturally, mental hygiene and sex hygiene. Following the physical examination at entrance an annual re-examination is a valuable procedure and carries with it many highly desirable by-products, but I am not prepared to say dogmatically that the annual physical examination should be a major objective, in itself, of a health service. After all, the annual physical examination is a tool—a very valuable one indeed—in the hands of the preventist, it is simply a means to an end and if the end is lost sight of a great deal of money and time may be spent in annual routine physical examinations without securing any tangible results. In operating a health service it is well to build on fundamentals and having arrived at conclusions as to what your health service should accomplish, then with what is available in money and personnel, etc., adopt the tools that will most effectively accomplish this ideal. Simple methods of making your student body health conscious and of securing the early reporting of even pre-clinical illness will accomplish a great deal more in your endeavor to prevent illness than many hastily-done routine physical examinations and will be an excellent substitute for some of the real values that come from carefully conducted periodic physical examinations.

The Health Service has a responsibility also in creating and maintaining a healthy environment in

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Routine for Care and Treatment of Acute Intoxications (Poisonings) at the Minneapolis General Hospital*

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THE following is the policy of treatment of cases of poisoning on the Minneapolis General Hospital Nervous and Mental Service which is based upon past experience in this institution:

Residents and Internes are required to follow the prescribed routine as hereinafter outlined in every case of poisoning.

Treatment must be instituted immediately on admission of the patient to the Nervous and Mental Service.

Any comatose patient must be regarded and treated as a case of poisoning unless some other cause for the coma is established. When such a cause is not indicated it is obligatory to request blood urea and sugar determinations.

In every case of poisoning, where the poison has been taken by mouth, the stomach is to be lavaged immediately, even though several hours may be known to have elapsed since ingestion of the poison.

Apomorphine is not to be used if there is irregular or failing respiration or a fall in blood pressure.

If there is doubt as to the agent (poison) used, the first washings are to be saved in clean, dry Mason jars provided for that purpose, allowing for laboratory analysis when necessary.

TREATMENT IS DIRECTED TOWARD:

I. Removal of the poison.
II. Neutralization of the poison,—chemical antidotes.
III. Promotion of elimination of the poison by the body.
IV. Supportive measures—symptomatic treatment.

SPECIFIC TREATMENT METHODS

(A) Carbon Monoxide Gas

1. Artificial Respiration (Shaefer Method).
2. Hyperventilation with carbon dioxide (5 per cent to 7 per cent oxygen mixture). The mask and bag should be adjusted so that the gas is given under slightly increased pressure.
3. Injection of respiratory stimulant.
4. Application of external heat according to the patient's temperature.
5. If there is a doubt as to diagnosis, a specimen of blood may be taken and kept in a tightly stoppered tube.
6. The patient should be hyperventilated at intervals during the forty-eight hours following the poisoning.

(B) Morphine and Opium

1. Artificial respiration. (Shaefer Method, Intra tracheal insufflation; Drinker Respirator).
2. Gastric lavage with 0.5 per cent potassium permanganate solution. Leave one pint of this solution in the stomach. Lavage is not necessary when the drug has not been taken by mouth.
3. Magnesium Sulphate. Three ounces of saturated solution by mouth or through tube.
4. The patient must be kept awake and preferably in motion. Aromatic spirits of ammonia may be used.
5. Caffeine Sodium Benzoate grains 5. (By hypodermic).
6. Apply external heat according to patient's temperature.
7. Atropine Sulphate grains 1/75. (By hypodermic).
8. Charcoal by mouth. (Carbo animalis 15-30 grams.)
9. Caffeine diuretic by mouth for four days.

(C) Strychnine

1. Intravenous injection of five per cent Sodium Amytal solution at rate not greater than 1.0 cc. per minute until patient loses consciousness, corneal reflex disappears, or until a maximum of 14 cc. have been given, or: General inhalation anesthesia (chloroform or ether) to control convulsions. After anesthesia has been established give chloral hydrate, grains 30 or 40 by rectum.
2. Gastric lavage with 0.5 per cent solution of potassium permanganate. Leave one pint of this solution in stomach.
3. Magnesium Sulphate, saturated solution, three ounces by mouth.
4. Charcoal as in morphine poisoning.
5. Artificial respiration if necessary.
6. Keep patient quiet. Reduce external stimuli to a minimum.

(D) Barbiturates

(Veronal, Barbital, Luminal)

1. Gastric lavage with sodium bicarbonate solution. Do *not* use emetic.
2. Aromatic Spirits of Ammonia ½ to 1 dram by mouth.

*Presented at a meeting of the Hennepin County Medical Society, November 7, 1934.
*From the Minneapolis General Hospital and Division of Nervous and Mental Diseases, Medical School, University of Minnesota.
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3. Elevate foot of bed.
4. Intravenous glucose 10 per cent, 1,000 to 2,000 cc.
5. Force fluids by mouth.
6. Artificial respiration if necessary.
7. Apply external heat according to patient's temperature.

(E) Choral Hydrate

(Knock-out drops)

Treatment same as that for Barbiturate poisoning.

(F) Mercuric Chloride

(Corrosive Sublimate)

1. Gastric lavage with milk or solution of egg albumin.
2. Leave at least one pint of above in stomach.
3. Magnesium Sulphate (saturated solution), four ounces by mouth.
4. Soap suds enema.
5. Sodium bicarbonate 10 grams daily for four days.
6. Force fluids by mouth or hypodermically, if necessary. Measure and record intake and output of fluids. Do not allow intake to far exceed output.
7. Low protein diet.
8. Special nursing care to mouth.
9. Elevate foot of bed during period of shock.

(G) Arsenic

(Paris Green, Roach, Rat and Fly Poisons)

1. Gastric lavage with warm water until washings return clear.
2. Introduce thru tube:
   a. Warm milk—one pint.
   b. Magnesium sulphate, three ounces.
   c. Sodium Thiosulphate, two grams.
3. Sodium Theo sulphate, one gram intravenously in 10 cc. water b.i.d. for four days.
4. Sodium Thiosulphate, 1 gram by mouth t.i.d. for four days.
5. Enema, b.i.d.
6. Force fluids. Fluids hypodermically if there is vomiting.

(H) Inorganic Acids

1. Use soft nasal catheter. Do *not* use large stomach tube. If patient is vomiting, do not use any tube. Milk of magnesia, four ounces by mouth. Repeat. Do *not* give Sodium Bicarbonate.
2. Milk diet started immediately.
3. Control pain.
4. Apply external heat as required.
5. Treat shock.

(I) Caustic Alkalis

(Lye, etc.)

1. Use soft nasal catheter.
   Gastric lavage with repeated small washings with diluted vinegar or 1.0 per cent acetic acid.
2. Four ounces olive oil or cream.
3. Sponge external burns with acid and apply cold cream.
4. Call nose and throat consultant for prevention and care of sequellae.

(J) Phenol and Lysol

1. Lavage stomach with 10 per cent solution of alcohol until phenol odor disappears from washings.
2. Sodium Sulphate, 2.0 ounces by mouth.
3. One pint milk in stomach.
4. Apply external heat according to body temperature.
5. Intravenous fluids and elevation of foot of bed if blood pressure falls.
6. Force fluids by mouth.
7. Sponge external burns with alcohol solution and apply cold cream.

(K) Iodine

1. Sodium Thiosulphate solution lavage.
2. Starch solution into stomach.

(L) Hydrocyanic Acid

1. Gastric lavage with 0.5 per cent potassium permanganate solution:
2. Leave one pint of solution in stomach.
3. Artificial respiration if necessary.
4. Caffeine Sodium Benzoate grains, 5. (By hypodermic).
5. Inject promptly by intravenous method from 1.0 to 2.0 gm. of methylene blue in one per cent normal salt solution.

List of Medicaments and Supplies to be Stocked at All Times upon Nervous and Mental Service Floors and Stations

1. One pint Mason jars for collecting specimens of stomach contents in cases of poisoning in which the agent cannot be determined (one dozen jars).
2. Complete carbon-dioxide-oxygen inhalation unit to be on station at all times. Extra tank.
3. Tablets or folded papers containing 0.5 grams of potassium permanganate (50 tablets or papers) or: Potassium permanganate solution. Five-tenths solution (1:500), (one gallon).
4. Magnesium Sulphate (saturated solution).
5. Aromatic Spirits of Ammonia (one pint).
6. Animal charcoal (10 ounces).
7. Theo-calcine, grains 7½ (200 tablets).
8. Chloroform and ether for anesthesia (two cans each).
9. Mask for anesthesia.
10. Sodium Thiosulphate for intravenous and oral administration. (20 ampoules.) (Two ounces.)
11. Soft nasal catheters (2).
12. Milk of Magnesia (one quart).
13. One per cent Acetic Acid (one gallon).
14. Cold cream (four ounces).
15. Olive Oil (one quart).
16. Sodium Sulphate—saturated solution (one pint).
17. Corn Starch (eight ounces).
18. Methylene blue 500 cc. of one per cent normal salt solution.

Incidence of Acute Poisonings

The following tables will indicate number, type, and fatalities in the hospital cases for the annual period beginning July 1, 1932 and ending June 30, 1933:

TABLE I
SUICIDAL POISONINGS—88 CASES

	Total No.	Died
Carbon Monoxide	26	..
Lysol	21	..
Iodine	11	..
Bichloride of Mercury	8	..
Potassium Bermanganate	6	..
Veronal	6	..
Rat Poison	2	2
Rubbing Alcohol	1	..
Chloral Hydrate	1	..
Salicylic Acid	1	..
Luminal	1	..
Liquid Ammonia	1	..
Camphophenique	1	..
Formaldehyde and Bichloride	1	..
Paris Green	1	1

TABLE II
ACCIDENTAL POISONINGS—57 CASES

	Total No.	Died
Gas	12	2
Morphine	11	1
Veronal—		
(Acute)	2	..
(Chronic)	6	..
Phenobarbital (Acute)	5	..
Kerosene	3	..
Arsenic (Acute)	1	..
Lysol	4	1
Aconite	1	..
Paraldehyde	3	..
Amytal	2	..
Lead (Chronic)	1	..
Bromide (Acute)	1	..
Atropine	1	..
Chloral	1	..
Phenol	1	..
Cocaine	1	..
Mouth Powder	1	..

We wish to acknowledge to Dr. Edgar Brown of the Department of Pharmacology our thanks for his suggestions and comments on the outline for specific treatments.

A Statiscal Survey of Methods of Cross Indexing and Filing of Medical Records

(Continued from Page 9)

Classified Nomenclature of Disease is being used in six per cent of the institutions answering the questionnaire. However, all of these institutions seem to be carrying their previous nomenclature at the same time as they are trying to introduce the Standard Classified list of diseases. In 25 per cent of the total institutions, the adoption of the Standard Classified Nomenclature of Disease is being considered. Thirty-four per cent of the total institutions answering the questionnaire are using either the Massachusetts General, Ponton's or Bellevue's Nomenclature.

4. This picture of the existing status of filing records and cross index methods of clinical records in hospitals of the country would be very much worse if small hospitals under 100 beds in size had been included in the study.

Eclampsia

(Continued from Page 12)

ing the prognosis and the after-care of the patient.

2. We do not know the actual cause of eclampsia.

3. In spite of this, considerable progress is being made in the treatment as evidenced by the lowered mortality rate.

4. The radical type of treatment is apparently losing ground in favor of the conservative treatment.

5. Hypertonic glucose solution and magnesium sulphate are valuable aids in the treatment of eclampsia.

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What the University Expects from the Student Health Service

(Continued from Page 13)

which the student may work. Co-operation with the teaching faculty in the matter of curricular assignments, hygienic arrangement of the daily schedule, proper relationship of work and recreation will be a valuable phase of Health Service activity.

Conditions of air and light and cleanliness in recitation halls, laboratories, library, gymnasium, swimming pools are part of the health problem of the college. As a type of laboratory work in hygiene courses students should become familiar with the measures the university employs to maintain a hygienic environment. Every residence hall, dining hall and kitchen should, in detail of construction and management, be a reinforcement of the health program and not a menace to it. Protected water supply, pasteurized milk and intelligent, disease-free, food handlers should be insisted upon.

It is impossible to paint a picture of an ideal health service because it may take so many forms and these forms will depend on the size and type of the institution, the community and all facilities that are available. A health service built on fundamentals in a preventive atmosphere, keeping in mind the responsibility to the student, to the parent, and to the institution, will function as a valuable and indispensible part of every educational program.

Pulmonary Syphilis

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THE subject of pulmonary syphilis is often approached with a great deal of hesitation. This is due to the apparent or real infrequency of this condition and may be attributed also to the lack of a satisfactory number of studies or to contradictory information. The skepticism of Lord is shared by many. He says: "The diagnosis (of pulmonary syphilis) cannot be made with assurance during life, and is often uncertain at the postmortem." Still, when one remembers the fact that syphilis is responsible, directly or indirectly, for 16 per cent of all deaths in the United States it seems advisable that more attention be focused on the possible occurrence of pulmonary syphilis in the practice of those who are dealing with chronic diseases of the lung.

The protean manifestations of syphilis which may simulate tuberculosis are the main sources of confusion and erroneous diagnoses. For the illustration of this point we quote the following case.

This patient, a 29-year-old, white, married female, was referred to the sanatorium for diagnosis. The family history was negative for tuberculosis. The past history was irrelevant. Onset of the disease three years prior to admission to the institution. Complaints: considerable cough, slight expectoration, diaphragmatic pain, occasional dyspnea, streaked sputum on one occasion, frequent chills, loss of appetite and moderate loss of strength. She was found to be overweight (height, five feet six inches, weight, 175 pounds). The general physical examination was negative. The laboratory findings were normal, except that the Wassermann and Klein reactions of the serum were four plus. The sputum was negative for tubercle bacilli on repeated examinations. The chest plates revealed a peribronchial fibrosis extending well out to the periphery throughout both lungs. These changes were attributed together with the pulmonary and constitutional symptoms to syphilis and she was advised to seek specific treatment for this disease.

Another patient, a 19-year-old white female, was sent to the sanatorium with the tentative diagnosis of minimal pulmonary tuberculosis. The onset of the illness was four months before admission to the institution. She complained of moderate cough and expectoration, thoracic pain, dyspnea, occasional chills and fever, marked loss of strength, loss of weight and streaked sputum. She was found to be fairly well nourished (height, five feet seven inches, weight, 106 pounds), and anemic. The examination revealed shotty cervical and submaxillary lymph nodes, and considerably enlarged lymph nodes in the inguinal region. There were mucous plaques in the mouth and condylomata lata around the rectum. The physical findings over the chest and the roentgenograms of the lungs were essentially negative. The sputum was negative for tubercle bacilli on repeated examinations. Tuberculin tests were negative on two occasions. The red cell sedimentation test was normal. The Wassermann and Klein tests were four plus. She was discharged as clinically non-tuberculous with the diagnosis of secondary syphilis.

It is impossible to determine what percentage of patients who had had positive Wassermann and Klein tests, had a syphilitic bronchiectasis. We do not mean to imply that the co-existence of bronchiectasis and a positive Wassermann test indicates a syphilitic etiology of this condition. We also readily agree with the opinion of Wiese that marked improvement on arsphenamine and iodides may occur in any chronic suppurative pulmonary disease, therefore, it does not necessarily prove the syphilitic nature of the lesion. Still, bronchiectasis resulting from syphilitic ulceration, scar tissue formation, and broncho-stenosis has been reported by clinicians and pathologists, and must be kept in mind, when dealing with this condition.

Obstruction of one of the main bronchi by a syphilitic scar may be the cause of massive atelectasis with all its typical consequences.

Syphilis may attack the branches of the pulmonary artery. A classical description of this condition, known as Ayerza's disease, can be found in the work of Warthin. Karscher states that syphilis may effect the pulmonary artery as a productive cicatrical lesion-like that form common in the aorta; it may occur as a gummatous arteritis, or it may be manifested simply by the formation of gummas. Ayerza's syndrome consists of a hypertrophy of the right ventricle associated with polycythemia, cyanosis and dyspnea.

The number of reported cases of syphilitic

*Clinical Director, Muirdale Sanatorium.

pleurisy is rather small. According to Orszagh a dry or exudative form may be found in the secondary stage or in the third stage with or without involvement of the underlying lung. He states that those obstinate, often recurring cases, lasting for years, which are accompanied by great induration, should be suspected of being of syphilitic origin.

A positive Wassermann reaction which is more positive in the pleural exudate than in the blood serum is thought to be suggestive of syphilitic pleurisy. The therapeutic test may prove of great value in problematic cases.

Syphilis is not infrequently the cause of pulmonary symptoms, such as cough, expectoration, thoracic pain and dyspnea in cases of cardiac failure induced by aortic aneurysm.

It may be of some interest to mention a case of a patient who was treated by the well-known conservative routine at the sanatorium for diaphragmatic pleurisy for a long while. His chief complaints were thoracic pain, malaise, loss of weight, and lack of appetite. The physical, roentgenological and laboratory findings were negative, except for positive Wassermann and Klein tests. The failure of all therapeutic measures forced us to further diagnostic studies which resulted in finding anisocoria, and positive Romberg and Argylle-Robertson syndromes. The belt-like thoracic pain and the constitutional symptoms were manifestations of tabes.

Congenital syphilis has little clinical significance because infants with pneumonia alba are often still-born or die shortly after birth. If the child survives with pneumonia alba the symptoms are usually less marked than in a case of lobar or bronchopneumonia of the same extent. Skavlem writes that the child in such cases is not acutely ill, though it appears anemic, weak and wasted; the leucocyte count is low with a relatively high lymphocyte count. In late congenital syphilis with pulmonary changes syphilitic keratitis, and characteristic pathologic changes of the teeth, nose and ears will aid in establishing the diagnosis.

According to Howard the incidence of pulmonary syphilis to syphilis of other organs is 1:20. A splendid discussion of the pathological details, together with an exhaustive historical review of the subject, is available in the work of McIntyre. In general, five types are differentiated. These are (1) gumma, (2) chronic interstitial pneumonia, (3) pulmonary sclerosis, (4) bronchopneumonia, and (5) mixed forms.

The gumma varies from miliary syphilomas to orange sized or larger lesions. The lesion often begins at a site near the hilum and spreads toward the periphery. The most often seen diffuse fibrotic form involves the peribronchial, perivascular structures and interlobar septa.

Pulmonary syphilis occurs twice as frequently in men as in women. Elizalde studied this condition in 30 adults and found that it was unilateral in 24. It is more frequent in the middle and lower lobes than in the upper lobes, although it may occur in any portion of the lung.

The difficulties of pathological diagnosis are emphasized by competent authors. One of the main reasons of these is that spirochetes are rarely found in the diseased area. Moissejew described double refracting lipoid bodies in such lesions. Tanaka states that in syphilitic scars strands of smooth muscle are present.

The only undisputed type of pulmonary syphilis is the so-called pulmo lobatus, characterized by massive cirrhosis of the lung with deep retraction of its surface. According to Landsberg there are only 11 cases reported in the literature.

The lack of history of syphilitic infection with primary or secondary manifestations does not exclude syphilis. Early or limited processes may develop without marked constitutional or local symptoms, still in others cough and expectoration, not unlike bronchitis, are complained of quite early. If bronchial stricture, secondary infection, bronchiectasis or cavity formation supervene the sputum becomes purulent. As the disease advances, dyspnea and thoracic pain may become intense. Slight elevation of the temperature is not infrequent; high fever is rather rare. Hemoptysis may occur, but less often than in tuberculosis. Fatal pulmonary hemorrhage has also been reported.

The general nutritional condition does not suffer as much as in cases with a corresponding amount of tuberculosis, although there are instances reported in which the patient lost much weight or appeared emaciated.

The physical findings are similar to those found in bronchitis and parenchymal tuberculosis. As a result of fibrosis the roentgen shadows are sharply defined. In more recent lesions, or when fibrosis is absent, the diseased area may show worm-eaten edges. It must be stated, however, that these changes are not pathognomic of pulmonary syphilis.

The bacteriological findings of the sputum are not specific. Search for signs of syphilitic aortitis, aneurysm, or other syphilitic manifestations, such as generalized lymphadenitis, secondary manifestations of the skin and mucous membranes, neurosyphilis or gumma in any part of the body, is of prime importance.

Concerning differential diagnosis the following points must be also kept in mind: In all patients whose Wassermann reaction is positive and who have an atypical pulmonary disease, such as unresolved pneumonia, bronchopneumonia, bronchiectasis, persistent bronchitis or apparent tuberculosis with repeatedly negative sputum, the possibility of the syphilitic origin of the pulmonary pathology must be thought of.

The same attitude is advisable in Wassermann positive cases: (1) When symptoms are less than would correspond to the extent of the pulmonary affection; (2) when the tuberculin tests are negative, or are positive only to strong dilutions, and the evidence of active tuberculosis is absent; (3) when non-tuberculous pulmonary diseases, such as tumor, Hodgkin's disease, fungus or Vincent's infection, abscess, post-influenzal fibrosis or early and advanced fibrosis, caused by dust inhalation, can be ruled out; (4) when roentgenological findings are rather "unusual" in type or localization and tuberculosis cannot be proved; (5) when there is no satisfactory response to routine sanatorium measures; (6) when in the presence of an obscure pulmonary disease the blood pressure is high, provided that cardio-vascular and renal conditions can be eliminated, and (7) when there is a prompt and favorable response to anti-syphilitic treatment.

No one should consider the diagnosis of pulmonary syphilis an easy matter. But if built upon the above determinants it may be made with justification. In addition, we wish to say that it may be necessary for the exclusion of tuberculosis with reasonable certainty to resort to repeated homogenized sputum examinations and animal inoculations. The predominantly fibrous lesions do not show substantial improvement on anti-syphilitic treatment, therefore, the latter cannot be used as a diagnostic criterion in such cases.

The prognosis depends upon the time of detection in relation to the duration of the disease, upon the type of lesion—gummatous lesions are most easily influenced by treatment—upon the extent of syphilitic processes in other organs, which, if far advanced, render the prognosis unfavorable, upon the presence or absence of pulmonary tuberculosis—according to Matthes of a group of syphilitics a larger number died of tuberculosis than of syphilis—and finally, it depends upon the adequacy of treatment.

The treatment consists of the use of arsphenamine, bismuth, mercury and iodides according to the well-known methods for the treatment of syphilis in other organs.

During the past seven years there were seven cases diagnosed as parenchymal pulmonary syphilis out of a total of 3,643 adult patients discharged from Muirdale Sanatorium. The lesions were classified as follows: Two fibrotic, three mixed type, and one gummatous with a syphilitic pleurisy with effusion. The latter case came to post-mortem examination. In the three mixed types improvement followed specific treatment. None of these patients had evidence of active tuberculosis.

Conclusions

The opinion might not be unwarranted that the cause of the apparent infrequency of pulmonary syphilis in general hospitals is the fact that most chronic pulmonary ailments are referred to and treated in sanatoria.

The rather small number of post-mortem examinations in sanatoria might account for the rather scarce reports from such institutions.

Efforts to obtain more post-mortem examinations may throw a new light on this subject.

Because of the fact that most sanatoria are reserved for the tuberculous and, therefore, non-tuberculous syphilitics cannot be kept there for any great length of time, it is of utmost therapeutic and scientific interest to establish in these cases a close follow-up system between the sanatoria and clinics, dispensaries or private physicians to whom these patients are referred for treatment.

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HAPPY NEW YEAR

There is no past; the past once was but is no more. There is no present. That which we call the present has neither time, space nor dimensions of any kind. It is an imaginary dot twixt that which was and that which will be. However used, it can only denote the absolutely immeasurable transition point between the past and the future.

When we speak of the present time, it has already gone from us even by the length of time that is required to utter the thought. No sentence or act can be recalled. Other words may be spoken and other actions may be taken to alter or modify those of the past but each, with its final period, belongs to the dead past over which we have no control.

Neither the past nor the present then exist. There remains but one thing that we may apply ourselves to, and that is the future. If we were fatalists or believed in luck, it would not matter, but a rational belief in cause and effect calls for diligent application. The future is the golden age of promise; it is something to conjure with. It is ours to shape and mold as we will, according to our various capacities and dispositions. Limited only by these and the opportunities that our environments present to us, we are the architects and builders responsible for that structure which the historians of 1935 are now about to write.

Neither mysticism nor religion prompts the thought that there must be something in life apart from material things. The good we do, our love and our unselfish acts of kindness are not garnered by the grim Reaper of Time. They go to increase the sum total of human happiness. They contribute to the betterment of the world as long as human relations shall continue to exist, and they help to set the ethical standard of unborn millions. That is the future with its undying possibilities and it continues to unfold itself to all, but perhaps with greater opportunities for him whom Robert Louis Stevenson graciously called "the flower of our civilization."

The opportunities of 1934 are gone and we stand at the threshold of another year. We are anxious to see what lies beyond. Open sesame! And the gates swing open again upon another sweep of the Avenue of Service that physicians have dedicated their lives to tread. Nothing could be more beautiful; nothing could give greater satisfaction than to continue the course we know so well and love so much. We shall treasure each hour and day that is given us to spread sunshine and happiness throughout the year.

A. E. H.

MEDICAL PROGRESS AND ECONOMIC SOLIDARITY

A report from the meeting of the American Hospital Association is to the point that an American observer in certain Central European countries this past summer found the economic and political uncertainty reflected in chaotic hospital and health programs. In fact, it was stated that conditions in ill starred Russia were no worse, and had one advantage of a fixed policy, and health measures were arising from a primitive level to one that savored of general application and progress.

Conversely, the high attainments elsewhere in Central Europe were leveling downward in a most unhappy manner. Statistics seem to indicate that this is not yet reflected anywhere in a greater incidence of tuberculosis, and unemployment with enforced leisure is offered as one factor to offset possible undernutrition and mental perturbation.

The lesson for America and its varied health programs would seem to be found in adapting all our efforts to as reasonable a budgeting of effort and money as possible, until economic solidarity again obtains. It is salutary also to attempt to apportion and contrast values. Every zealot, whether in public health or general education, not to mention many other evangelistic outlets, feels that theirs is the certain effort and need, **sine qua non.** Not a few are willing to admit that there are many human attainments of even greater value than health; indeed, that common everyday honesty (so seldom seen in our Machiavellian political philosophy) is of greater importance to the state. It has been written that "no political or economic Utopia can rise very far above the **character** average of its people." This is one of many reasons why our 4 H clubs and scouting organizations combine such fine tenets of health and moral stamina with the goal of ultimate self reliant citizenship.

E. L. T.

LOOKING FORWARD

Many times in the world's history the private practice of medicine and full-time institutional positions have been more remunerative than at present. However, there has never been a time when the physician could practice medicine so satisfactorily, and when he could carry out the high ideals of the medical profession as the present. Observations and researches have thrown so much light on the diagnosis, treatment, and prevention of disease that today the physician can do more for those who consult him than at any previous time in the world's history.

When one contrasts the scientific approach in arriving at diagnosis and satisfactory treatment of such conditions as diabetes and pernicious anemia, with the vague knowledge and the unsuccessful treatment of these diseases only a short time ago, one truly appreciates the great progress that has been made. This contrast might be extended to the diagnosis and treatment of other diseases. Marked advances have been made in surgical technic, and surgery has been extended to parts of the body which just a few years ago the surgeon looked upon with hesitancy. Within the lifetime of many of us, communicable diseases, such as diphtheria and typhoid fever, have been reduced from major disabling and killing proportion to insignificance. To see the communicable diseases disappearing with the resulting increase in the span of life is a source of great satisfaction to the members of the medical profession. The fact that we have learned how to prevent many communicable diseases for future generations is most gratifying.

No physician has practiced in a community free from the poor. Physicians everywhere have prided themselves upon their willingness to care for the poor without remuneration. They have looked upon it as a privilege and as a part of their contribution to society. During the past few years the ranks of the poor have been materially increased and likewise the work of the physician. To be sure there is a limit to the extent to which physicians can carry on this kind of work, but up to that limit it is being done without complaint. As incomes in general have decreased and standards of living have been reduced, physicians have accepted their full share, for they realize that they are an integral and essential part of society. For hundreds of years the medical profession has taken this attitude and has survived through periods of prosperity and depression. As we enter the year 1935, we can be assured that whether financial conditions become better or worse, the medical profession is in a position to render better service than ever before, and will do all in its power to provide medical care for the needy.

J. A. M.

THE PRESIDENT'S PROGRAM

It did not require the qualifications of a soothsayer to predict, as we have done in earlier issues, that matters would be taken out of our hands in the development of sickness insurance

in Washington. As soon as Mr. Roosevelt announced his outline of plans for a program of measures to ensure economic security it became very evident that no scheme of that sort would be complete without some provision being made for the medical care of those unable to carry the load themselves, and this is precisely the way the thing is working out. The control is overwhelmingly political; organized medicine is recognized in the set-up only in a very perfunctory way, and, when the final account is rendered, we are very much of the opinion that we shall have to take whatever is handed to us, even if we have had no real voice in its construction.

This will probably not come soon, however, for it seems to be the last step contemplated in the fabric making of the economic security program. First must come the questions of unemployment and old age insurance, and both of these are knotty enough to require considerable discussion and an elaborate and costly financial provision. The planning of schemes for medical care can begin now, but it will hardly reach any form of decision until after these other matters are out of the way. It is understood that the committees and commissions now provided for the purpose are planning extensive factual studies which will be used in the final evaluation and we can only hope that these researches will cover the ground in an impartial way and bring out the points which will lead to some satisfactory solution of this very important problem.

G.C.

Proceedings of the Minneapolis Clinical Club

REGULAR MEETING, NOVEMBER 8,1934

President, Dr. Erling W. Hansen, in the Chair

SACROILIAC DISEASE COMPLICATING URINARY TRACT LESIONS A REPORT OF TWO CASES

Edward T. Evans, M.D., F.A.C.S.

A careful study of the literature of the last ten years contains no report of cases similar to those which I wish to report. It may be that these cases are in their onset and characteristics purely coincidental but I could not help but be impressed with the fact that two such similar cases presented themselves with a history of pre-existing urinary tract infection.

If one considers the anatomy of those structures close to the sacroiliac joint, one cannot fail to appreciate the possibility of either contiguous or close metastatic infection arising in the sacroiliac area from the urinary tract. The sacroiliac joint itself is protected anteriorly by a relatively thin capsule made up of the anterior sacroiliac ligaments. It is supplied by branches from the descending sacral artery and the same venous channels drain the areolar tissue lying between the ureter and the anterior aspect of the sacroiliac joint. The ureter itself after crossing the iliac artery and vein lies within one-half inch of the sacroiliac joint. I have just recently had occasion to see an acute septic sacroiliac lesion with anterior abscess formation displacing the ureter at least one and one-half inches toward the mid line and anteriorly.

A clinical factor which gives some credence to my contention regarding the etiology of two cases which I shall report, is the frequency with which we observe low backache as a result of prostatic and seminal vesical infection, which low backache we are inclined to ascribe not only to the referred pain but also to the factors of drainage from the area involved.

I am led to report these two cases not alone because of their rarity, but also to point out the necessity of a careful interpretation of symptoms in order to determine the development of complications superimposed upon a pre-existing condition.

The first case is that of a young lady, age 26, whom I saw on March 13, 1934. She gave a past history of having had a right ureteritis during the fall of 1933, which had been treated by Dr. Exley with complete relief until about a month prior to my having seen her. Check on her genito-urinary condition showed the ureteral condition to be satisfactory, and close questioning revealed the fact that the pain was no longer a pure ureteral type but, rather, deep seated in the right sacroiliac area with radiation down the posterior aspect of the thigh. Associated with this ther was a definite left total tilt—the so-called sciatic scoliosis. X-rays revealed an abscess localized deep within the right sacroiliac joint. I performed a right sacroiliac fusion according to the Smith-Peterson technique. She was discharged from all treatment on September

6, 1934, and has been working since, with complete relief from symptoms. Bacteriological study is negative for tuberculosis.

The second case is that of a young man, age 24, who gave a past history of having had an operation upon his right kidney four years previously for severe hydro-nephrosis. Six months prior to my seeing him his right kidney was removed. It was stated that the ureter was removed with the kidney close to the bladder. During the removal of the kidney some urine was spilled from the hydro-nephritic sac. The wound healed cleanly and the patient was relieved of his previous kidney colic type of pain. One month prior to my seeing the patient he developed more backache, which he described as being low in the right lumbar area. Associated with this he developed a definite scoliosis with radiation of pain down the right sciatic distribution. X-rays revealed the process shown in these films, namely an acute infectious arthritis of the right sacroiliac. General examination showed no tuberculosis and his tuberculin test to be normal. His temperature and pulse were normal. The findings led me to feel that the patient had a rather low grade type of infection. For this reason I applied a plaster spica and the patient is now under the care of his brother, who is a doctor, and is reported as being quite comfortable. I feel that this sacroiliac joint will, in all probability, fuse itself although I am prepared at any time to institute drainage if further observation so indicates.

In conclusion, my only excuse for presenting these cases is to raise the question as to whether or not sacroiliac disease may be one of the complications of urinary tract disease.

Discussion

Dr. Leo G. Rigler: I remember one case—a doctor who had pain in his back. He saw an orthopedist and had X-rays of the sacroiliac joint taken but they showed nothing. The orthopedist thought, because of some peculiarity in the history, that it might be a condition secondary to a disturbance in the prostate. He sent the patient to a urologist. The prostate was found to be somewhat boggy and he massaged it vigorously for sometime but it didn't seem to do him much good. Finally he went back to the orthopedist again, who decided he wasn't getting very far, had another X-ray examination of the whole back made, and we found a ureteral stone right over the area where he had tenderness.

The case has not very much to do with those Dr. Evans presented except to indicate the close association between urinary tract diseases and their symptoms and those of sacroiliac disease.

AN UNUSUAL SPINAL CORD LESION

Case Report

H. B. Hannah, M.D.

The case I am going to report is, I think, a very unusual case from many different standpoints; first, from the standpoint of history; second, from the standpoint of physical findings, and third, the substantiation of diagnosis by X-ray technique and the unhappy results up to the present time.

This man is 49 years old, lives in Scobey, Montana. He went to the Northwest Clinic at Minot and saw Dr. Paul Rowe the first part of August of this year. Dr. Rowe had him in the hospital at Minot for three or four days and sent him down here.

In 1913 this man had what he called, or what was diagnosed as "bilateral sciatic rheumatism" across both buttocks and down both thighs. This lasted for something like two years and then was considerably better, although never was he entirely free of pain or distress. In 1925 and 1926 he had an exacerbation of his pain in the right buttock and down the back of the right thigh. He became better again after a period of a year but was never completely free of discomfort in this back, in both buttocks and down both thighs. About three years ago he had another attack while out threshing. He developed a sudden pain in his back and had a severe pain in his back and down the left leg for a period of about a week and again the condition improved although never free of pain in his back from 1913 up until this summer. He always said there was something wrong in his back, always some discomfort in his back.

In the latter part of June of this year he was working, and during the course of the forenoon his back again became extremely painful. He sat down to eat at noon and felt a sharp pain below and to the inside of the left buttock, although he said he had attacks of pain similar to this in the past and did not pay much attention to it. The pain became worse on standing up and was relieved on sitting down. During all the month of July the pain was rather severe in his left buttock and gradually went down to the back of the left leg. Sometime about the first of August it was very severe in the left buttock and down the back of the left leg. One morning, on awakening, he had pain in both buttocks, in the small of the back and down the back of both thighs. He was given a hypodermic of H.M.C. and went to sleep, and on awakening he had a typical saddle feeling of numbness. He then found he was unable to urinate. The numb-

ness not only went down the back of both thighs but down the calves and outer side of both feet, involving all of his toes. This was a sudden appearance of numbness following about twelve hours after he had his hypodermic. He then found he could not move his feet. He could move his legs at the knees and at the hips but no movement in his feet and no movement in his toes.

Within a couple of days he found he could not control his urine at all. He was also involuntary as far as control of his bowels was concerned. When I arrived the examination showed he had this area of numbness: over both buttocks, down the back of the thighs, back of the leg, back of feet, front of feet and the outer side of both legs about half way up to the knees. In other words, he had an involvement of the five sacral segments, fifth lumbar and part of the fourth lumbar. He had no movement in his feet although he had good movement in his knees and good movement in his hips. While at Minot a retention catheter had been placed. Achilles jerks were present. Rectal examination showed no muscle tone. You could slide a catheter in and out without any difficulty.

I attempted to do a spinal puncture and as the needle passed in I seemed to strike not bone but some hard substance. After going through this hard substance, which offered a great deal of resistance to the needle, I was unable to get any spinal fluid between the third and fourth. I then did a lipiodol injection. This picture taken immediately after the injection of lipiodol shows the lipiodol coming to rest at about the center of the body of the third lumbar. To make sure that it was not an artificial block but a real block I had this X-ray repeated some four hours later. It shows that the lipiodol has settled down into a globule at the level of the third lumbar.

Spinal fluid was obtained at the time of the lipiodol injection and it showed a negative serology. The next day a laminectomy was done covering the first, second, third, and fourth lumbar vertebrae. The dura was exposed and in this particular region one noted a rather firm mass lying on the dura, extra-durally. This mass was dissected off and the dura split. At the point where this mass had been the dura had been compressed and the cauda equina, instead of showing a normal round appearance, was flattened out against the opposite side so that it appeared like small ribbons. The cauda showed a rather bluish grey appearance but after a very few seconds and after separting these fibers one from the other, the appearance became normal. There was nothing else demonstrable under the dura. This mass was then sectioned and the report I received was that the mass was made up of cells that appeared like cartilage and it has been suggested that this mass was a partially displaced intervertebral disk which was lying on the dura. I do not know whether that is correct or not but that is the report received by the pathologist at Northwestern Hospital.

Since this mass was removed and since the tip of the cord was explored and nothing found inside except this mass plastered on the dura, this man has made no improvement. He has had no return in sensation—he has had a very slight return insofar as he can evert and invert his feet, otherwise he has no power of dorsal flexion and no power of dorsal extension of his feet. In addition, he has developed a rather marked atrophy of muscle groups below the knees.

This case is presented because of some rather interesting features to me. Did this man have this mass beginning back as far as 1913? In the next place, it is always dangerous to make a diagnosis of bilateral sciatic neuritis. It probably does occur but it occurs very infrequently. The next question involved, were these exacerbations of pain which this man had over frequent intervals during these twenty-one years all due to this same pathology or were they due to an intercurrent infection like a sciatic neuritis? In the next place, this lipiodol injection was done and showed very beautifully, but could not the diagnosis be made as to the location of the lesion just as certain without the use of lipiodol and without the use of X-ray? In other words, I still feel that careful clinical bedside examination offers just as much if not more than many additional laboratory facilities will offer to you.

In the next place, after two and one-half months following removal of the mass, it being below the tip of the cord, why has not this man regained some function in his legs or more than he has regained up to the present time? Another interesting feature is that the loss of control of this man's feet, the numbness and the pain that he had preceding the numbness was very sudden and the numbness appeared within six hours, being just as complete within six to twelve hours after the pain as it has been at any other time.

All of these things are difficult to explain. The most difficult thing of the whole case is the long period that this man has had trouble in his back, and referred pain down the back of both legs and to try to understand how, if this

tumor was the cause of it, it could have been present all this time without causing the very acute neurological findings up until such a recent date.

Discussion

Dr Leo G. Rigler: I want to take issue with Dr. Hannah as to the value of the lipiodol examination. In the last three cases we have had at the University Hospital the neurologist, after the most careful examinations have been from two to four segments off as to the localization of cord tumors. In one case the surgeon could not find the tumor the first time he went in and it was only on the second operation that he found it. The last case we had was localized with a good deal of reservation because of the difficulty of examination. It appeared to be somewhere in the cauda equina but the block was actually between the eleventh and twelfth thoracic vertebrae. That is a much more accurate localization.

I think that undoubtedly some cord tumors, on painstaking examination, can be localized very well and others are much more difficult. Our experience in general has been that the neurological examination indicates the block at least from one to two segments below the actual location of the tumor itself as later determined, and I think from that point of view the iodized oil examination in itself is a very helpful thing aside from the actual determination that the block is present. I think our experience at the University Hospital has been that it is an invaluable aid in certain cases. I would not say that is always true.

Dr. L. R. Boies: I would like to ask Dr. Hannah if this cartilage removed showed any evidence of change from normal tissue of this type; that is, whether there was any evidence of proliferative change or evidence of atrophy.

Dr. J. S. McCartney: I am not sure that I saw this section although I think that I did two or three months ago. The tissue was composed of ordinary garden variety of fibrocartilage. It did not have the appearances that go with a true cartilaginous tumor. It could have been taken from a normal piece of cartilage so far as I could tell.

Dr. Erling W. Hansen: I would like to ask Dr. Hannah if the use of lipiodol has been succeeded by untoward effects so that there is any objection aside from temporary irritation?

Dr. H. B. Hannah: Some three years ago I did a lipiodol injection on a patient—some question as to the diagnosis, whether he had a tumor or not. It finally turned out that he didn't but quite a bit of lipiodol was dropped in and then finally collected down below the conus and acted as a foreign body. Finally we had to do a laminectomy in order to get the lipiodol out because of a complaint of pain in his buttocks and down the back of his thighs.

As to the accuracy of localization with lipiodol, I think we will have to concede that point as it is very accurate. The point I was bringing out here is that so frequently before a patient is studied and before a history is carefully written and time given to think the history over, and without carefully going over a patient clinically, charting sensory disturbances and paying careful attention to loss of muscle function, one of the first things men want to do is to get X-rays and do a lipiodol injection and then, if there isn't any block, go back and write the history, do the physical and the neurological after they have first jumped to laboratory technique.

I think that this is also true at the present time in conditions around the head, particularly injuries to the head. An individual may have a third nerve paralyzed with a dilated pupil and before any attention is paid as to what the patient shows, an X-ray of the head is taken. I have no criticism and I do not mean to take issue on that particular point with X-ray men and X-ray technique, nor the use of lipiodol; the point I want to emphasize is that they should be the second procedures and not the first procedure.

DEMONSTRATION OF A MODEL OF THE VISUAL PATHWAY

Charles Wilbur Rucker, M.D.

Dr. C. W. Rucker showed a model of the visual pathway which he had made as an aid in teaching perimetry. He thought that if the students could actually see the bundles of nerve fibers they might remember a little better their arrangement. The more intimately they know the arrangement the more intelligent should be their interpretation of the perimetric fields.

A slide was projected on the screen to show the general plan of the pathway as a whole and another slide was shown outlining the visual area on the cortex of the brain.

The model had been built on a scale of five to one and represented the fibers concerned with seeing. The bundles of nerve fibers corresponding to the four quadrants in the field of vision had been painted distinctive colors as had also the macular bundle.

Dr. Rucker described how various types of defects in the perimetric fields could be explained by supposed lesions on the model of the pathway.

Discussion

Dr M. H. Nathanson: What kind of a lesion would produce a concentric reduction in the visual field of one eye?

Dr. H. B. Hannah: I think Dr. Rucker should be congratulated on preparing such a model as he has and he certainly has demonstrated this so that anyone should easily understand the relationship of the optic fibers.

Dr C. W. Rucker: Such a defect in the field of only one eye would be most commonly produced by some inflammatory or vascular disease in the choroid or retina, such as disseminated choroiditis or some condition in which there is a spasm or blockage of the retinal vessels, especially near the periphery.

J. K. Anderson, M.D.,
Secretary.

Proceedings Minnesota Academy of Medicine

Meeting of November 14, 1934

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, November 14, 1934, Dr. Archa Wilcox, president, in the chair. The meeting was called to order at 8 p. m.

There were 49 members and one guest present.

Minutes of the October meeting were read and approved.

Upon ballot, the following men were elected as candidates for membership:

Dr. R. G. Allison, Minneapolis, Active Membership.

Dr. H. W. Grant, St. Paul, Active Membership.

Dr. R. D. Mussey, Rochester, Associate Membership.

The scientific program was as follows:

SURGICAL TREATMENT OF RETINAL DETACHMENT

by

Frank E. Burch, M.D.
St. Paul

Dr. Burch read a paper on the above subject and showed numerous lantern slides.

Discussion

Dr. W. E. Camp (Minneapolis): It has been my privilege to assist Dr. Burch in two or three of these operations at the University Hospital and also to observe several other cases and to see his uniformly good results. I think his success depends on two factors: first, his careful technic, observation, and treatment after operation; and, second, because of his selection of cases for operation. It is not to be expected there would be a good result in cases of long standing.

In speaking of detachment, there are two kinds of detachment of the retina; the kind that is due to a pushing off of the retina due to fluids coming through from the vitreous and, second, those which are due to a pulling off of the retina, due to cyclitic exudates. In these latter cases re-attachment is impossible and good vision could not result. But a careful selection of serous detachment cases, combined with our modern technic gives good results. I am very pleased to hear this paper and see the slides which Dr. Burch has shown.

Dr. Arthur E. Smith (Minneapolis): I think the substitution of diathermy for the cautery has been a great step in advance. The effect of cautery is difficult to control and there is often damage done to subjacent tissue by the transmitted heat. Dr. Burch is to be congratulated on this fine series of cases.

Dr. C. N. Spratt (Minneapolis): One of the sad chapters in ophthalmology is the treatment of detachment of the retina. In the last five or six years, however, much has been accomplished, and more articles have been written on this subject during this short period than the previous fifty years. Untreated idiopathic detachment invariably leads to blindness. Certain traumatic cases may recover spontaneously. The operative cure after modern methods varies from 30 to 50 per cent. Vogt of Zurich states that in 1881, Martin, de Wecker and de Luca used ignipuncture for treatment of detachment and that in 1896 Deutschmann attempted to cure detachment by ignipuncture at the site of the tear. Galezowski, in 1902, systematically practiced ignipuncture in the treatment of detachment of the retina. Gonin's work has aroused interest in the treatment of detachment. The use of diathermy has simplified the operation and is less likely to be followed by complications than when the cautery is used. Vogt, in the November number of the British Journal of Ophthalmology, advocates the use of the cathode or negative pole in detachment of the retina. This is interesting,

as Verhoeff, of Boston, seventeen years ago treated detachment by the use of the negative pole. I have had no experience with this but have used diathermy for the past two years.

Dr. Arnold Schwyzer (St. Paul): I would like to ask Dr. Burch why it is so very important to find the hole in detachment?

Dr. Burch (in closing): Dr. Spratt's remarks about evaluation of technic are apropos. Undoubtedly when Vogt, before the Swiss Ophthalmological Society in May, 1934, described the use of galvanism with very low milliamperage as a means of inducing adhesive choroiditis, he may have contributed another important improvement which, although still in the experimental stage, may work out satisfactorily. It is possible also that cauterizing the surface of the sclera with the electric thermophore, as I understand is being tried out at the Medical Center in New York, may offer something of value in the evolution of treatment.

So far as concerns the matter of locating the hole and absolute occlusion, that is the *sine qua non* in the matter of surgical therapy. It is absolutely proven that best results follow occlusion of this communication between the vitreous and the subretinal space, so that fluid will not continue to pass through the retinal hole or tear and produce a redetachment afterward. At least, one must produce an adhesive choroiditis and wall off the hole so that extension of the detachment cannot occur. It is the first principle in correct surgical treatment of retinal detachment.

HYPERTHYROIDISM IN CHILDREN

by

Martin Nordland, M.D.
Minneapolis

Dr. Nordland read a paper on the above subject and reported 11 cases.

Summary

Hyperthyroidism in childhood is observed rarely enough in the experience of the average physician to arouse unusual interest. This is manifested by the occasional appearance in the literature of a single case report of this disorder. The authors of articles discussing this subject have variously employed the upper age limits of 12, 14 and 16 years. In the review of the literature it is evident that the number of cases increases rapidly after the 12th year.

Dinsmore, in 1926, reported 48 cases of hyperthyroidism in children treated at the Crile Clinic. In the discussion of this subject in 1932, Rankin reported 91 cases of exophthalmic goiter in children treated at the Mayo Clinic. This number represented 0.6 per cent of a total of exophthalmic goiters treated. More than 90 per cent of the cases of hyperthyroidism in children occurs in females. In this paper, eleven cases of hyperthyroidism in children, from 8 to 16 years of age, are reported.

Etiology

The factors contributing to the etiology of hyperthyroidism in children have been attributed to (1) the administration of iodine for prophylactic measures, (2) focal infection, and (3) heredity.

Symptoms

The cardinal symptoms of hyperthyroidism in children are in general similar to those in adults. There are, however, some interesting and *distinct differences*. The uncommon nervousness and irritability noticed first by the parents usually marks the onset of this disease in children. (1) Exophthalmus and (2) enlargement of the neck occur somewhat earlier than in adults. This may be attributed to the shorter duration of the disease in children. (3) Tachycardia and palpitation are present as in adults but the secondary symptoms such as dyspnea, edema and arrhythmia seldom if ever occur in children. (4) Gastrointestinal disturbance such as vomiting and diarrhea are more common in children than in adults, while the (5) tremor and (6) loss of weight occurring in the adult is seldom observed in the child. As contrasted with the mental confusion which exists in the severe cases in adults, the (7) mentality remains remarkably clear in the severe cases in the child. Two of our cases illustrated this point very well. Considerable difference of opinion exists as to what may be considered the normal (8) basal metabolic rate in children. Dubois states that the question is not settled. He points out that the variation in the findings of competent observers are very uncertain, especially in the excitable hyperthyroid child.

Table No. 1 shows the rather constant findings by the various methods of examination in the adult. Table No. 2 illustrates the marked variation in the basal metabolic reading after computation by the various methods of examination for the child.

Basal Metabolic Studies

TABLE I

Mrs. E. R., Age 37 Years

Standard	Sage-Aub-Dubois	Krogh's Mod. Aub-Dubois	Harris Benedict	Dreyer	Bailey
Plus	33.3%	43.1%	37.2%	36.5%	33.3%

Normals ..... Sage Aub-Dubois
36.5 calories per sq. meter hour.
Harris Benedict
58.3 calories based on combination of weight, and age, height flat figures.
Dreyer
58.6 calories, being 10% reduction from figure for males, based on weight and age.
Krogh Modification of Aub-Dubois
33.9 calories per sq. meter hour.
Bedale McLeod—No figures for adults.
Bailey—36.5 calories per sq. meter hour.

TABLE II

L. D., Age 16 Years

Normals	Sage-Aub-Dubois	Aub-Dubois Krogh Modif.	Benedict Talbot	Bedale McLeod	Bailey
February 17, 1934	Plus 51.3%	Plus 78.1%	Plus 91.8%	Plus 84.5%	Plus 69.5%
			Ligation and tonsillectomy in May, 1934.		
October 2, 1934	Plus 38.7%	Plus 55.7%	Plus 69.3%	Plus 61.6%	Plus 45.5%
			Thyroidectomy October 6, 1934.		
October 17, 1934	Plus 6.7%	Plus 11.4%	Plus 20.0%	Plus 15.5%	Plus 4.0%

Normals ..... Sage Aub-Dubois—Calories per sq. meter hour.
15 years, 43 calories; 16 years, 40 calories.
Krogh's Modification—Calories per sq. meter hour.
15 years, 39.5 calories; 16 years, 38.3 calories.
Benedict-Talbot—Calories per kilo body weight.
15 years, 51.7 calories; 16 years, 52.5 calories.
Bedale McLeod—Calories per sq. meter hour.
15 years, 38.34 calories; 16 years, 36.96 calories.
Bailey—Calories per sq. meter hour.
15 years, 42 calories; 16 years, 41 calories.

Treatment

The medical treatment employed in the case of hyperthyroidism in children is relatively the same as that used in the adult. Preliminary hospitalization is more desirable in the child than in the adult. Ten drops of Lugol's solution three times a day is given for a variable length of time depending upon the individual severity of the case and the response to medication. One week is sufficient in the average case. Gaining of weight and slowing of the pulse are the main factors in the selection of the time for operation. Medication is always employed only as a preoperative measure.

The graded surgical procedures are still useful in children in spite of the advantages gained by the use of Lugol's solution. Because of the marked tendency for growth and hyperplasia of the residual stump, subtotal resection of the thyroid should be equally radical with that in adults. An effective sedative the night previous to the operation, as well as the followng morning preceding the operation is advantageous. The anesthetic should always be general, preferably ethylene or nitrous oxide gas.

The meeting adjourned.

R. T. La Vake, M.D.,
Secretary.

NEWS ITEMS

Dr. P. R. Billingsley, has been appointed president of the McKennan Hospital at Sioux Falls,

Dr. Lawrence Maillet, Whitehall, Mont., was recently married to Miss Evelyn Devaney, of Omaha, Nebr.

Dr. Moses Barron, Minneapolis, was the guest speaker at the State Teachers College, Bemidji, on December 14.

Dr. A. A. Bennett, Chicago, has become associated with Dr. Mark Vornholt, Roundup, Mont., in general practice.

Dr. Charles D. Owston, a physician at Neche, N. D., died after a short illness of heart trouble at the Grafton hospital.

Dr. G. J. Dierkes, aged 43 years, passed away last month at his home in Winona, Minn., after a short illness of pneumonia.

Dr. W. F. Aubyn, formerly located at Great Falls, has moved to Havre, Mont., and has opened offices for general practice.

Dr. Warren Wilson, Northfield, Minn., was elected president of the Rice County Medical Society at its recent annual meeting.

Moorhead, Minn., is to have a new clinic with

Dr. Kenneth Malvey, a graduate of the University of Minnesota, organizing the same.

Dr. J. M. Nelson, formerly located at Hebron, has moved to Valley City, N. D., where he has become associated with Dr. A. W. McDonald.

Dr. W. H. Gilsdorf, New England, N. D., was host to the members of the Southwest District Medical Society at their monthly meeting in December.

Dr. F. J. Hirschboeck, Duluth, was the principal speaker at the December meeting of the Public Health Association, at Moorhead, Minn. The doctor presented a paper on "Heart Disease."

Drs. E. A. Meyerding and S. M. Brist, both of St. Paul, were the principal speakers on the program of the Red River Valley Medical Society, at the December meeting held at Crookston.

The Watertown Medical Society held its annual meeting in that city recently, and elected Dr. H. T. Kenney, president; Dr. H. J. Bartron, vice-president, and Dr. M. C. Jorgenson, secretary.

Steele County, Minn., Medical Society elected new 1935 officers as follows: Dr. D. H. Dewey, Owatonna, president; Dr. J. F. Schaefer, Owatonna, vice-president, and Dr. L. N. Bergh, Montevideo, secretary.

Over 400 physicians and surgeons were present at the December meeting of the Minneapolis Surgical Society at the Hennepin County Medical Society Auditorium, where a very interesting program was presented.

Dr. W. A. Morgan, Wasta, S. D., died from the results of an auto accident last month. Dr. Morgan was well known in South Dakota, having been in active practice at Camp Crook and Lemmon, for many years.

The Red River Valley Medical Society's new officers for 1935 are: Dr. A. W. Swedenburg, Thief River Falls, president; Dr. A. R. Reef, Crookston, vice-president, and Dr. C. W. Froats, Thief River Falls, secretary.

At the annual meeting of the District Medical Society, held at Yankton, the new officers elected are: Dr. Wm. F. Bushnell, Elk Point, president; Dr. F. E. Williams, Wakonda, vice president, and Dr. J. A. Hohf, Yankton, secretary.

Dr. John H. Higgins, who has been in active practice at Lake and Twenty-seventh Avenue So., Minneapolis, for the past 25 years, was tendered a complimentary dinner by his many professional and business friends in that district.

Dr. and Mrs. C. J. Fritsche, New Ulm, Minn., have returned from their Alaskan honeymoon, loaded down with trophies, the results of many enjoyable days of hunting. Both Mr. and Mrs. Fritsche are graduates of the University of Minnesota.

Goodhue County Medical Society held its annual meeting recently at Red Wing, Minn., and elected its new officers, with Dr. W. W. Liffrig, Goodhue, president; Dr. Howard Claydon, Zumbrota, vice president; and Dr. L. A. Steffens, Red Wing, secretary.

Mount Powell, Mont., Medical Society will have the following officers for the year 1935: Dr. A. C. Knight, Philipsburg, president; Dr. F. L. Terrill, Galen, vice president; Dr. L. G. Dulap, Anaconda, secretary, and Dr. T. J. Kargacin, Anaconda, treasurer.

At the annual meeting held at Deadwood, S. D., December 6, of the Black Hills Medical Society, the new officers were elected as follows: Dr. F. L. Hummer, Lead, president; Dr. C. A. Walters, Belle Fourche, vice-president, and Dr. R. M. Baker, Sturgis, secretary.

Dr. Louis W. Allard, Billings, delivered the first of a series of lectures at Bozeman, Mont., this month, his subject being "Physical Handicaps." The subject of the surgeon's talk was taken from his many years of experience in rehabilitating children who have been crippled by infantile paralysis.

Dr. W. E. Donahoe, Sioux Falls, was elected president of the Seventh District Medical Society for the coming year, with Dr. F. C. DeVall, Garretson, vice-president, and Dr. H. R. Hummer, Sioux Falls, secretary. After a fine dinner was served, a general discussion on medical affairs followed.

Dr. Henry E. Michelson, Minneapolis, Professor of Dermatology at the University of Minnesota, has been chosen to present the subject of "Newly Recognized Forms and Facts in Tuberculosis of the Skin" before the Ninth International Congress of Dermatology and Syphilis, which will meet in Budapest in 1935.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota is the speaker. The program for the month will be aas follows:

January 1st, (Holiday); January 8th, "Insomnia"; January 15th, "Appendicitis"; January 22nd, "Problems of the Blind"; January 29th, "Cancer Research."

The Yankton Medical Society held its annual meeting last month, at Yankton, with a large attendance of members and visitors. The following very interesting program was presented: "The Thymus Gland—Diagnosis and Treatment of the Enlarged Thymus," Dr. Goldie E. Zimmerman, Sioux Falls; "Ophthalmology in General Diseases," Dr. J. B. Gregg, Sioux Falls; "Report of an Interesting Case," Dr. F. E. Williams, Wakonda; "The Present Status and Trend of the Education and Training of Nurses with Recommendations Pertaining Thereto," Dr. E. M. Stansbury, Vermillion.

A program of health education, sponsored by the South Dakota State Medical Association, consisting of a series of weekly radio broadcasts given from 6:45 to 7 p. m. each Sunday over station WNAX at Yankton, and designed to benefit the general public with health information. The broadcasts will deal with general problems common to everyone. The articles are prepared by South Dakota physicians and surgeons who are members of the medical association. They are edited and approved by an editorial board composed of officers of the association, and are broadcasted by Dr. S. M. Hohf of Yankton.

The Minneapolis Surgical Society will present the following program on January 10, 1935, at 8:00 p. m., Todd Amphitheater, University Hospital. Papers read to be limited to ten minutes only. Dr. N. Logan Leven (by invitation), "Visualization of the Biliary Tract by Injection of Opaque Media Post-operatively"; Dr. Vernon L. Hart (by invitation), "Subastragaloid and Triple Arthrodesis"; Dr. William T. Peyton, "The Treatment of Some Types of Arteriovenous Ansurysms and Cavernous Hemangiomas"; Dr. Ralph T. Knight, "Current Events in Anesthesia"; Dr. Herbert A. Carlson (by invitation), "Variations in the Technique of Thoracoplasty"; Dr. C. Donald Creevy (by invitation), "Litholapexy"; Dr. Melville H. Manson (by invitation), "Biological Phenomena in Hodgkin's Disease"; Dr. Owen H. Wangensteen, "The Surgery of Hyperinsulinism." Anyone interested is cordially invited to attend.

Dr. Arthur C. Dean passed away December 1st at St. Mary's Hospital, East St. Louis, Ill., following only a few days illness. Dr. Dean was born at Hatton, N. D., July 23, 1887. He attended Fargo College and received a Bachelor of Arts degree from the University of North Dakota. He graduated from Jefferson Medical College in 1917. During the World War he served in the Navy Medical Corps and was on the Hospital Ship Mercy. He practiced medicine at Grand Forks for two years following his service. Due to ill health he was forced to spend most of the next two years in California. In 1925 he took a year of post-graduate work in eye, ear, nose and throat at Chicago. He had just recently established a practice at East St. Louis and was on the staff at Washington University Medical School at St. Louis. Dr. Dean was very active in the various state and local medical societies to which he belonged and was a fellow of The American College of Surgeons and the Academy of Opthalmology and Otolaryngology. He was a member of Beta Theta Pi and Phi Chi fraternities. Military and Masonic honors were paid him at funeral services held December 4th, at Grand Forks, N. D.

BOOK NOTICE

THE GENERAL PRACTITIONER'S FRIEND

The Year Book of General Medicine (1934), edited by George F. Dick, M.D.; Lawrason Brown, M.D.; George R. Minot, M.D., S.D.; William B. Castle, M.D., A.M.; William D. Stroud, M.D., and George B. Eusterman, M.D.; Chicago: The Year Book Publishers, Inc.; 843 pages, 1st edition, cloth; $3.00 postpaid.

This is an annual compendium which should bring joy to the heart of almost every physician; but particularly to the heart of the isolated general practitioner. For thirty-four years these year-books in medicine have been coming from the presses with a regularity as unfailing as the famous old *Chatter-boxes* which delighted everyone during childhood Christmas days.

An admirable staff of editors, headed by no less than Nobel prize-winner George R. Minot, of Harvard; George F. Dick, of the University of Chicago, and Lawrason Brown, of Trudeau Sanitorium, have scanned contemporary medical writings for the year 1934, both in domestic journals and foreign publications, sifting out the most salient pieces to form a unified and departmentalized history of medical progress during 1934.

The work is composed of five parts: infectious diseases, diseases of the chest, diseases of the blood and blood-forming organs, diseases of the heart and blood vessels, and diseases of the gastro-intestinal tract. Each part is complete in itself, and reflects the most notable advances of the year in the specific field treated upon.

For the general practitioner, who has neither the time nor the money to expend in poring over the hundreds of medical periodicals published every month; and for the urban specialist, who fears that his reading may become too closely restricted to his own field, *The Year Book of Medicine (1934)* should prove invaluable. It is well worth the modest sum asked for it by the publishers.

The JOURNAL LANCET

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New Series

Cerebral Hemorrhage*

E. M. Hammes, M.D.†
St. Paul

THE subject of intracranial hemorrhage is of intense interest to every field of medicine as it may occur at any time of life, even before birth or as the terminal episode of senility. The knowledge of its etiology, of its association with other diseases, and of its more successful treatment has in a large measure been obtained through the introduction of the lumbar puncture by Quincke over 30 years ago, and by the more universal study of the spinal fluid in cases suggesting this pathologic condition. Intracranial hemorrhage, because of its varied etiology, is a frequent clinical syndrome. In the past ten years 927 cases of this type were admitted to the Ancker Hospital, 203 due to trauma (exclusive of birth trauma) and 724 due to other causes.

It might be of interest to note that as early as the Sixteenth Century Botallo and Duret reported the first two cases of apoplexy with intraventricular hemorrhage, verified at post-mortem. In 1886 Loewenfeld[1] discussed the etiologic factors in apoplexy and emphasized the importance of arteriosclerosis of the basilar blood vessels, the frequency of associated contracted kidneys and cardiac hypertrophy, the significance of alcohol, lead and syphilis, the hereditary tendencies, and the apoplectic constitution, factors which even to this day are recognized as important causative agents.

*Read at the 47th Annual Meeting of the North Dakota State Medical Association, held at Fargo, N. D., May 28 and 29, 1934.

†Professor of Neurology and Psychiatry, The Medical School, University of Minnesota.

Among other diseases which have a tendency to produce a hemorrhagic diathesis with cerebral bleeding one must refer to purpura hemorrhagica, pernicious anemia, and the leukemias. In the latter disorders[2] the cerebral hemorrhage may be massive but usually occurs in multiple small foci in various regions of the brain.

Epidemic encephalitis with its multiple syndromes occasionally presents the picture of an apoplectic insult with hemorrhagic spinal fluid. Spiller has called attention to the development of cerebral arteriosclerosis in the later stages of encephalitis and this undoubtedly is the fundamental cause of the cerebral hemorrhage. Similarly, the apoplectic attacks associated with diabetes are on the same basis of a cerebral arteriosclerosis.

Hemorrhagic encephalitis secondary to the various infectious disorders not only manifests itself by multiple hemorrhagic areas throughout the brain, but occasionally the entire syndrome is masked by an extensive extravasation of blood in the cerebrum. Acute phosphorus, arsenic, and C. O. poisoning may present a similar clinical picture.

Occasionally spontaneous massive hemorrhage may occur in gliomas or other vascular brain tumors. The onset may be sudden and the initial symptom, or an acute exacerbation may develop in the course of the usual brain tumor manifestations. Oldberg,[3] in a study of 832 varified gliomas observed this in 31 cases, or 3.7 per cent.

Spontaneous subarachnoid hemorrhage with its acute onset, its hemorrhagic spinal fluid, and often without any definite localizing cerebral manifestations, again presents a syndrome frequently quite typical of an apoplexy. Symonds[4] believes that a ruptured aneurism is the causative factor in the majority of instances, either on an arteriosclerotic basis or due to a local congenital defect of the media. Goldflam[5] suggests that the fundamental cause may be a functional disturbance of vasomotor control and the bleeding of venous origin, analogous to that which is said to occur in migraine, Raynaud's disease and erythromalagia. Pathologic studies by J. C. McKinley[6] at the Neuropathologic Laboratory, University of Minnesota, seem to support Goldflam's theory.

A similar clinical syndrome is encountered in cerebral varicosities. This rare condition can be suspected in the presence of angioma of the face or neck region, but can only be definitely diagnosed at post-mortem.

In massive hemorrhages associated with chronic alcoholism, general paresis, and some of the other chronic psychoses, the hemorrhage is frequently sub-dural and the onset not as dramatic. The bleeding is usually slow and of venous origin. The symptoms are often suggestive of a rapidly growing neoplasm.

Rarely one encounters a cerebral hemorrhage following a diagnostic lumbar puncture. This is evidently due to the rapid decrease in intracranial pressure. Because of the increasing tendency among some physicians to perform ambulatory lumbar punctures this danger should be emphasized. Schaller[7] reported a case of hemorrhage in the anterior portion of the thalamus in a child from whom four c.c. of spinal fluid had been removed for diagnostic purposes. No symptoms developed until 13 hours after the puncture. The child died one-half hour later.

Apoplexy due to syphilis may occur, but it is infrequent. The syphilitic toxins have a tendency to produce an endarteritis rather than an arteriosclerosis. With these vascular changes thrombi are more prone to develop than a hemorrhage.

Although hypertension, either essential or secondary to renal disease, is usually considered the most frequent cause of apoplexy, only 12 per cent of all hypertension cases have a cerebral accident and an even smaller percentage when the hypertension is due to nephritis. Perkins[8] reported a series of 647 cases of apoplexy with careful systolic blood pressure readings. The diastolic pressure was not recorded. In 105 cases, or 16.2 per cent, the systolic blood pressure varied between 100 and 140. In 205 cases, or 31.6 per cent, the systolic blood pressure was between 140 and 170. In the remaining 317 cases, or 51.2 per cent, the pressure varied between 170 and 300. These figures indicate that the belief that a very high blood pressure is essential for apoplexy is inaccurate.

Over sixty years ago Charcot and Bouchard[9] published their famous article that cerebral arteriosclerosis was frequently associated with the formation of miliary aneurisms and the rupture of the aneurisms resulted in the apoplectic attack. This doctrine as the most frequent causative factor has been accepted up to the present time. However, Globus and Strauss[10] in a recent paper on massive hemorrhage believe there are pre-existing necrotic areas, or areas of softening, which predispose to cerebral hemorrhage.

Cerebral arteriosclerosis may manifest itself at any age and may pass through its entire clinical course without any evidence of either hypertension or peripheral arteriosclerosis, and terminate in an acute apopletic attack. One of the most pronounced cases of this type was observed by us in a young man at the age of 19 with a normal blood pressure but with marked sclerotic changes in the blood vessels of the Circle of Willis.

Traumatic cerebral hemorrhage is next in frequency to that due to cerebral arteriosclerosis and hypertension. The hemorrhage may be either extra-dural, intra-dural, or within the brain substance. The most common and important lesions are the lacerations of the vessels of the leptomeninges with hemorrhage into the substance of the cortex beneath the site of the injury. In over one-half of the cases a similar contracoup laceration and hemorrhage occurs. In the majority of instances the underlying white matter is fairly free and clear. The hemorrhages are usually multiple, small, and streaky and run at right angles to the brain. In extensive injuries the hemorrhages are confluent and produce large areas of softening. Deep multiple hemorrhages may be found in the pons, medulla, and basal ganglia. In Martland's[11] series of 309 autopsies, cortical laceration and hemorrhage occurred in 250 cases, or 82 per cent.

From the clinical standpoint the delayed traumatic intracranial hemorrhages offer the most interesting problems. They can be divided into two large groups.[12] The first group includes those cases in which the hemorrhage occurs within the cerebral substance and which are classified as traumatic late apoplexies. The accepted theory is that at the time of trauma some lesion of an intracranial blood vessel, such as an injury to one of the vascular coats, results with a subsequent aneurismal formation and later ruptures. The

most frequent location of the hemorrhage is either intra-ventricular or in the basal ganglia. In the second delayed group the hemorrhagic lesion is extra-cortical, either extra-dural due to a ruptured middle meningeal artery or intra-dural and of venous origin, giving rise to a true chronic subdural hematoma. In both groups the time interval between trauma and the delayed cerebral symptoms varies from several hours to days, and even months.

Intracranial hemorrhage, 927 cases admitted to Ancker Hospital, 1924-1933, include:

a. Traumatic	203	
b. *Other Causes	724	
Essential Hypertension	319	44.0%
Cerebral Arteriosclerosis	220	30.0%
Nephritis with Hypertension	79	11.0%
Syphilis of the Central Nervous System	25	3.4%
Chronic Alcoholism (Some Cases May Be Due to Trauma)	16	2.1%
Spontaneous Subarachnoid Hemorrhage	15	2.0%
Infections	12	1.7%
Senile Dementia	7	
Purpura Hemorrhagica	8	
Diabetes Mellitus	8	
Hemorrhagic Encephalitis	6	5.8%
With CO Poisoning	5	
With Brain Tumors	4	

*Diagnosis made from clinical picture, verified at post-mortem when possible.

The differential diagnosis of these various types of cerebral hemorrhage present many interesting problems. Cerebral hemorrhage producing the ordinary type of apoplexy usually manifests more definite symptoms of gross cerebral pathology, such as the hemiplegias, aphasias, and so forth. The location of the hemorrhage is intracerebral in the majority of cases and the symptoms are of a more permanent nature. The lenticulostriate and the lenticulo-optic branches of the Sylvian Artery are the vessels most frequently involved. For that reason the region of the basal ganglia and the adjacent part of the internal capsule are the areas of predilection. Furthermore, there is very little or no free bleeding into the subarachnoid space and the spinal fluid may be under pressure but is clear and not hemorrhagic unless we are dealing with an intraventricular hemorrhage, which is almost invariably rapidly fatal.

Premonitory symptoms sometimes of days' and even months' duration are not infrequent. The usual ones are hypertension, vertigo, headaches, insomnia, undue irritability, and other evidences of cerebral circulatory changes.

The spontaneous subarachnoid hemorrhage and its allied group present three outstanding symptoms:[13] The dramatic onset, evidences of marked meningeal irritation, and a uniformly hemorrhagic spinal fluid. Associated with these three one frequently encounters signs of increased intracranial pressure. The occurrence of a monoplegia or hemiplegia or other paralytic phenomena is rare, and if present is usually of a transient nature. These latter symptoms are due to mechanical causes and produced by the pressure of the extravasated blood upon the surface of the brain. Their transient character is an important diagnostic point in differentiating from a cerebral hemorrhage, from hemorrhagic encephalitis, or other destructive lesions involving the brain tissues themselves. If the hemorrhage is an extensive one, the patient is suddenly seized with a severe headache, becomes unconscious, and dies within a few hours. In less severe cases the patient complains of a sudden severe headache which may or may not be followed by a short period of unconsciousness. Irritative meningeal symptoms soon manifest themselves. There is marked neck rigidity, a positive Kernig, photophobia, restlessness, and muscular twitchings. The spinal fluid is under increased pressure and uniformly hemorrhagic. Two other important symptoms which one occasionally encounters in spontaneous subarachnoid hemorrhage are large retinal hemorrhages and the phenomenon of massive albuminuria. Although these patients have a dramatic onset and run a very stormy course, the symptoms frequently disappear fairly rapidly and approximately 50 per cent recover. However, there may be a recurrence in later years.

Syphilis of the central nervous system when complicated by an intracranial hemorrhage may present any variety of organic neurological syndromes. The positive Wasserman in the spinal fluid is the final diagnostic criterion.

The symptomatology of traumatic intracranial lesions depends upon the location of the hemorrhage, the extent of the laceration of the cerebral tissues, and upon the cerebral oedema which is invariably present. The symptoms are, therefore, intimately associated with concussion, contusion, and various degrees of compression.

The extra-dural hemorrhages of arterial origin are usually associated with a severe head injury. The classical picture of the middle meningeal artery rupture is the most frequent one. The patient presents the usual picture of concussion of a variable period immediately after the head injury. He may or may not be unconscious. He gradually recovers from this and may have a fairly symptom-free interval for an hour or longer. He then slowly develops increasing headaches, drowsiness, stupor, and coma. The pulse frequently becomes slow and the blood pressure rises. Because of the increasing intracranial pressure, focal symptoms gradually manifest themselves. These are usually more pronounced in the arm and the face than in the

lower extremity, as the blood has a tendency to gravitate to the lower part of the Rolandic area. As the condition progresses, symptoms of medullary compression manifest themselves. The spinal fluid in uncomplicated cases is clear, under increased pressure, and shows no evidence of blood. Following spinal drainage, one frequently notes a temporary clinical improvement.

The sub-dural hemorrhage commonly occurs in fractures of the base of the skull, at the site where the dura is torn. However, they may be observed in slight head injuries, especially a direct blow to the frontal or occipital region.[14] In the latter case the hemorrhage may be circumscribed over one or both hemispheres, quite extensive, and forming a pancake-like layer over the entire cerebral cortex. When the bleeding is profuse there is usually marked coma, with signs of medullary compression, and death. If the hemorrhage is less extensive or slower, cortical irritative symptoms manifest themselves, such as convulsions, paralysis of the extremities, more pronounced in the lower ones, with pathologic reflex changes. The spinal fluid is under increased pressure and may be clear or hemorrhagic.

The chronic sub-dural hematoma differs from other forms of intracranial hemorrhage in that the bleeding usually is of venous origin. Even with a unilateral head injury the hematoma is bilateral, in from one-third to one-half of the cases. The patient may be symptom-free for a period of hours or days or months, or may have indefinite complaints, such as headache, insomnia, and vertigo from the time of the accident. Early psychotic symptoms, such as undue irritability, restlessness, or mental sluggishness are not uncommon. Evidences of increased intracranial pressure gradually manifest themselves, along with localizing irritative, and later on paralytic signs. Sometimes these symptoms occur bilaterally in a single lesion, but more often a bilateral hematoma produces symptoms on one side only. The spinal fluid is under increased pressure, usually clear, sometimes xanthochromic, and may contain a few red blood cells.

The therapy of intracranial hemorrhage due to constitutional factors is still very limited. Patients with prolonged hypertension and evidences of renal changes are all potential apoplectics, and efforts should be made to improve the underlying condition. However, we all have encountered patients who adjust themselves for years with a hypertension of 200 or over, while others may develop serious manifestations with a much lower blood pressure. A careful dietary routine, moderation in work and exercise, a restricted protein diet, and limitation in the use of alcohol and tobacco are important factors in an attempt to improve the hypertension and other constitutional factors. But as Bernard Sachs stated, "So many prefer the short and merry life that there is no telling whether either men or women will, in the early years of life, regulate their social habits in such a way that they will not become candidates for apoplectic seizures during the later decades."

During the acute attack expectant treatment is often the best procedure. Patients with marked hypertension, bounding pulse, and increasing stupor frequently react favorably to venasection. If the coma is prolonged, careful spinal drainage and the use of hypertonic salt solution should be considered. Morphine is contraindicated in any form of intracranial hemorrhage, as it has a tendency to depress further the respiratory centers. For the restlessness and delirium, sodium luminal and codein, with some form of restraint, will usually suffice.

Penfield,[15] Naffziger,[16] and others have suggested a craniotomy with evacuation of the blood or clot in properly selected cases where there is a slowly deepening stupor and which do not respond to the usual treatment. They reported several cases successfully treated in this manner. Although there was a recurrence later on, it is their opinion that the procedure is justifiable.

In suspected spontaneous subarachnoid hemorrhage, and other acute obscure cerebral manifestations, a lumbar puncture is indicated for diagnostic purposes. The indiscriminate use of frequent spinal drainage, however, should be discouraged. Nevertheless, the cause of death in these cases of cerebral hemorrhage is almost invariably the increase of intracranial pressure, either due to the hemorrhage or the associated cerebral oedema. The best means to keep this in bounds is either by spinal drainage or intravenous hypertonic salt solution or glucose. For that reason we still drain frequently as long as symptoms of intracranial pressure persists, taking careful measurements with the spinal manometer in order not to reduce the pressure too rapidly.

The traumatic cerebral hemorrhages of the extradural and intradural type are usually surgical problems and each case requires individual consideration.

Case Reports

I—Case of Cerebral Syphilis with hemiplegia and hemorrhagic spinal fluid.

J. C., male, age 35. Family and personal his-

tory negative. Married for nine years, and wife has never been pregnant.

Present Complaint: On May 5, 1932, after lifting some heavy furniture patient walked upstairs. His wife heard a thud and found him at the head of the stairs in an unconscious condition. He was taken to the hospital and during the first three hours had a series of generalized convulsions. These subsided but the right side of his face and his right arm continued to twitch at irregular intervals. His pulse and respiration were rapid and irregular, and his general condition critical. His temperature was 99.8, axillary. He was extremely restless. He had to be catheterized during the first two days. The neurological examination was as follows: Head retracted and turned toward the right. Pupils contracted but responded promptly to light. Fundi normal; conjugate deviation of eyes toward the right; some weakness of the right facial muscles; all other cranial nerves were normal. All four extremities were uniformly spastic. Both knee and ankle jerks were increased with a bilateral positive Babinski. The abdominal and cremasteric reflexes were absent. The blood chemistry was normal, blood Wasserman negative, leucocytes 15,500;/ B. P. 130/80; hemoglobin 94 per cent; urine (catheterized specimen) contained one plus albumin, a few hyaline casts, and a trace of sugar. The albumin and casts disappeared after a few days, but a faint trace of sugar persisted for two months. The spinal fluid on admission was under increased pressure, uniformly hemorrhagic, and the Wasserman was four plus. The other tests were unreliable because of the hemorrhagic spinal fluid. X-rays of the skull were negative. Following the spinal drainage his restlessness and stupor improved, and his general spasticity subsided. Daily spinal drainages were performed for eight days and then at irregular intervals. He was placed on neosalvarsan and spinal drainage, and later on tryparsamide. His condition improved very slightly during the first three weeks; at that time he appeared a little brighter mentally, but was still completely disoriented. Neurological examination was negative except for an incomplete right hemiplegia with increased reflexes and positive Babinski on the right side only. Two months after admission to the hospital, with continued antiluetic treatment and weekly spinal drainage he was able to answer questions fairly accurately, could add and multiply simple tests, but at times was confused and disoriented. He could walk with assistance, dragging his right leg somewhat. After his return home he was quite irritable, highly emotional, there was no improvement in his incomplete hemiplegia, and he had an occasional involuntary urination. This condition has continued up to the present time, with some further mental deterioration. Spinal fluid examination made two months after the onset of the attack revealed a clear fluid under normal pressure, twelve cells, a positive globulin, a positive Wasserman, and colloidal gold curve 0113221000.

II—Case of Cerebrospinal Lues with acute onset with Convulsions and Hemorrhagic Spinal Fluid.

J. E., male, age 37, was seen in consultation with Dr. L. E. Daugherty. The family and personal history were negative. He had no knowledge of having had a venereal disease but gave a history of exposure. For the past year he has been subject to frequent mild headaches. Present complaint: While working in a baggage car he fainted, had a convulsion, and was brought to the hospital. On admission to the hospital he had a series of generalized convulsions, was unconscious, and his temperature was 101, pulse 120. His pupils were dilated and did not respond to light. The fundi were normal. All deep reflexes including knee and ankle jerks were present and equal. There was no Babinski or ankle clonus, no rigid neck or Kernig. The abdominal and cremasteric reflexes were absent. All other tests were unreliable because of the recent convulsions.

The spinal fluid was under increased pressure, uniformly hemorrhagic, 30 c.c. were removed. Following the spinal drainage his convulsions ceased. The urine was normal except for a trace of albumin. Hemoglobin 86 per cent; leucocytes 24,000; differential count and blood chemistry normal; blood pressure, systolic 104, diastolic 70. The blood Wasserman was negative. The spinal fluid Wasserman was positive. Other spinal fluid findings were unreliable because of the hemorrhagic condition.

He was placed on neosalvarsan with spinal drainage at weekly intervals, with bismuth intramuscularly, and iodides.

He had no further convulsions, regained consciousness after the first 24 hours, his spinal fluid gradually became clear, and he had an uneventful convalescence. He was discharged from the hospital after six weeks' treatment apparently well. His spinal fluid at the time of discharge was clear, four cells a trace of globulin, Wasserman two plus, colloidal gold curve 1123210000. He refused further treatment.

III—Case of probable spontaneous subarachnoid hemorrhage with recovery. Sudden death while asleep five months later.

Mrs. M., female, age 41, referred by Dr. S. Dulude, Dassel, Minn.

Family history negative except that the mother had migraine. Personal history negative except for severe migraine attacks of 10 to 40 hours' duration prior to each menstrual period. Has two children living and well.

Present complaint: About June 21, 1932, patient developed a headache similar to previous migraine attacks. She was able to be up and about part of the day. Her sleep was restless because of her headache. This was diffuse, especially occipital, and associated with pains in the lower extremities. However, the headache did not subside after the usual migraine period but continued unabated for eight days, and we were asked to see her. Her general condition on admission to the hospital was good. She complained of severe headaches, constant pains in both lower extremities, and blurred vision. Her temperature was 99, pulse 80, respiration 18.

The neurological examination revealed a markedly rigid neck, a positive Kernig, sluggish abdominal reflexes, absent knee and ankle jerks, no ankle clonus, no Babinski, and some hyperasthesia of the lower extremities. All cranial nerves, including the pupils and fundi, were normal. Her leucocyte count was 17,500; hemoglobin 78 per cent; urine, normal; blood pressure, systolic 150, diastolic 70. The spinal fluid was under increased pressure, markedly hemorrhagic, and 30 c.c were removed. The blood and spinal fluid Wasserman were negative. Following the spinal drainage her headache was slightly relieved and the pains in her legs subsided. She was placed on iodides and the necessary sedatives, and repeated spinal drainage was performed. She left the hospital after 32 days. The spinal fluid had become normal, and her headache had subsided. She reported one month later stating that she had progressed satisfactorily except for an occasional slight occipital headache. During her menstrual period one week previous she had a severe migraine headache of 20 hours' duration. The neurological examination at this time was normal throughout. Blood pressure, systolic 128, diastolic 70. She returned home, was up and about, did some house work, and slept well at night. About five months after the onset of the illness she died quite suddenly while asleep. No postmortem could be obtained.

IV—Head injury with unusual location of extensive cerebral hemorrhage and without any pathological neurological signs.

F. B., male, age 71, seen in consultation with Doctor F. M. Babcock, Northfield, Minn.

Family and personal history revealed nothing definite.

Present complaint: Eight days previous to my examination while walking on icy sidewalk patient slipped, fell backward, and struck his head on the cement pavement. He was momentarily stunned, but with assistance got up and walked to his home, one block distant. He was put to bed, complained of some headache, but slept fairly well that night. Examination was negative except for a marked ecchymosis in the occipital and upper cervical regions. He felt well enough to get up the next morning, but was advised to remain in bed, which he did. The slight headache continued, but he developed an intractable insomnia which would not respond to sedatives or narcotics. Our examination, made eight days after the accident, revealed no pathologic findings except the ecchymosis. His pupils, fundi, cranial nerves, and all reflexes and sensation were normal throughout. His urine was normal; blood pressure, systolic 150, diastolic 80. Patient was oriented and normal mentally, and made no complaints except for a slight diffuse headache and stubborn insomnia. His temperature was normal, pulse 76. A lumbar puncture was performed. The spinal fluid was under slightly increased pressure, and the first tube contained a hemorrhagic tinge, but in the second tube the spinal fluid was clear. Twenty c.c. were removed. The fluid was normal throughout except for a few red blood cells, which were thought to be secondary to the lumbar puncture. The patient was in his home, and for that reason one was unable to make any X-ray studies.

A diagnosis of cerebral concussion was made.

Following the spinal drainage the headache was relieved and the patient had a restful sleep that afternoon and night. The following afternoon his mild headache recurred and his insomnia again became pronounced. Another examination made five days later revealed no abnormal findings or pathologic reflexes. The spinal fluid on this occasion was normal. Three days later the patient became somewhat stuporous, developed a moderate temperature, and died the following day.

Post-mortem examination revealed a moderate degree of arteriosclerosis but no other pathologic findings. Upon opening the head a linear fracture of the left occipital bone extending to the Foramen Magnum was noted. There was a small punctate hemorrhage in the cortex of the left occipital lobe, a similar stellate hemorrhage, about the size of a half-dollar (contracoupe) on the cortex of the middle convolution of the right frontal lobe. Upon sectioning the brain a hemorrhagic layer about four c.m. wide and one c.m.

thick was found at the junction of the cortex and the white matter and extended uniformly from the mid frontal to the mid occipital region on the right side. This case is reported because of the unusual location of the cerebral hemorrhage and because of the paucity of symptoms, in spite of the extensive lesion.

V—Case diagnosed spontaneous subarachnoid hemorrhage with recovery. Two years later similar attack, diagnosed hemorrhagic encephalitis, with recovery. Three years later a third attack with death. Post-mortem examination revealed a cerebral hemangioma with marked varicosities over the frontal area.

J. B., male, age 33, seen in consultation with Dr. C. E. Hensel, July 23, 1923. His family and personal histories were negative except that at the age of ten he had an attack of otitis media. His present illness began July 6, 1923, when he was awakened about midnight with a terrific occipital headache. After taking aspirin he was able to sleep quite well the remainder of the night. The following morning he felt weak and tired and had a severe attack of emesis while at his office. He returned home at noon, because of headache and backache, rested for two dyas, then went back to his office for five days. During this time his headache and backache gradually became more severe and his sleep was poor and restless. On July 16, after he had finished his meal, he walked into the next room and suddenly became unconscious. This cleared up in about twenty minutes, after which he had severe headache, backache, and emesis for five days. The vomiting ceased but his headache continued. When examined on July 23 he was confused and irrational, complained of severe occipital pain and backache. His cranial nerves were normal, his neck rigid, a positive Kernig was present, knee jerks increased, no Babinski or clonus, no evidence of paralysis. All other findings were normal. The spinal fluid was under increased pressure, uniformly hemorrhagic, and contained many red blood cells. The supernatant fluid was yellowish, the Wasserman was negative, and there were no bacteria; the urine was normal except for a trace of albumin. Leucocyte count was 9,650, differential count normal. Blood pressure, systolic 128, diastolic 75. A diagnosis of spontaneous subarachnoid hemorrhage was made.

Under symptomatic treatment and repeated spinal drainage the clinical symptoms gradually subsided and the patient made a satisfactory recovery. He was able to leave the hospital September 28, 1923. With repeated lumbar punctures the spinal fluid gradually became less hemorrhagic and returned to normal. The patient remained well except that he tired more readily than before.

Two years later, on July 18, 1925, he had a similar attack. His wife was awakened at 4:30 a. m. by the sound of his groans. He was conscious, somewhat rigid, and his arms and legs jerked occasionally. He was nauseated and vomited several times. He improved for an hour, then suddenly developed a terrific occipital headache, and some stiffness of the neck. He became very restless and irritable.

The neurological examination was negative throughout except for a positive Kernig and neck rigidity; blood pressure, systolic 116, diastolic 58; urine normal; leucocytosis 18,250; spinal fluid under increased pressure, markedly hemorrhagic, a negative Wasserman, no bacteria, sugar 0.111; temperature, normal; pulse 70. A diagnosis of hemorrhagic encephalitis was made.

He was given repeated spinal drainage and acriflavine intravenously. He made a satisfactory recovery from this attack.

During his second illness he was under the care of Dr. Hensel and Dr. Riggs. Just before he left the hospital, September 2, 1925, Dr. Hensel kindly permitted me to examine him. His neurological findings were normal in every way and he felt well.

Three years later he developed a similar attack while in a hotel in Duluth and was under the care of Dr. L. R. Gowan and Dr. F. J. Hirschboeck. He had a very acute onset, presented a similar clinical picture as before, and died within a few days.

The post-mortem findings were normal except for the head. The brain was covered with a marked diffuse hemorrhagic exudate and a large cerebral hemangioma was found on the inferior surface of the right frontal lobe extending from its anterior tip posteriorly to the optic chiasm. This evidently was the etiologic factor in his three attacks of intracranial hemorrhage.

VI—Case of hypertension with mild renal insufficiency, retinal hemorrhage, and headaches, a potential apoplexy.

J. M., male, age 52, farmer, was seen in consultation with Dr. F. H. Lexa, Lonsdale, Minn., on May 5, 1934.

The family and personal history were negative. Present complaint: Patient was perfectly well until the middle of November, 1933, when he began to develop a slight occipital headache. This lasted for a few days, then would disappear and gradually recur with variable severity. There were no associated symptoms except that at times

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Shoulder Joint Injury, Rupture of the Supra-spinatus Tendon*

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MY INTEREST was aroused early this year in injured shoulders. A man, who had been injured over two years ago, came to me for examination. At about this time, an article appeared in the American Medical Association Journal of December 30, 1933, which gave me an idea of his trouble. Prompted by this incident, I began a study of shoulder joint injuries, and to look up the literature on the subject and then check back through my cases to pick up some I had not discovered previously.

Definition: In this paper we are dealing with injuries to the supra-spinatus tendon, including in this, any injuries which may occur in the insertion of tendon to the humerus, or in other words, where there may be some breaking up of bone at the insertion of the tendon.

Incidence: These injuries occur very much oftener than we have been accustomed to diagnose them. Codman, who has done a lot of research work and is doing a lot of work in this field, says: "I believe that rupture of the supra-spinatus tendon is the most common industrial injury of prolonged shoulder disability, and that more lost working days may be charged to it that all the other industrial shoulder injuries combined. Furthermore, although the suffering from it is chiefly of a subacute nature, this lesion is the most painful of shoulder injuries, due to the prolonged and persistent character of the symptoms."

Anatomy: The tendon of the supra-spinatus muscle, usually about six centimeters long, arises from the muscle belly in the supra-spinous fossa of the scapula and runs across the capsule of the shoulder joint to insert into the highest of three facets on the greater tubercle of the humerus. During the terminal half of its course it is inseparable from the joint capsule. Its two borders may be distinguished from the adjoining borders if the tendons of the infra-spinatus and subscapularis only with some difficulty. It forms the roof of the shoulder joint and the floor of the subacromial bursa, lying beneath the deltoid muscle and the acromial process of the scapula. Together with the tendons of the infra-spinatus, the teres minor and the subscapularis, it adheres to and greatly strengthens the capsule of the shoulder joint. Normally, there exists no communication between the subacromial bursa and the shoulder joint. This tendon is about one-third of an inch thick, and fastens on to the top of tubercle of humerus.

Infra-spinatus muscle arises from scapula below the spine and inserts into a facet just below the insertion of supra-spinatus.

Teres Minor arises from outer edge of the scapula and inserts in a facet just below insertion of infra-spinatus muscle.

Trapezius has its origin on the inner third of the superior curved line and the protuberance of the occipital bone, the ligamentus nuchae, the spines of the last cervical and all of the thoracic vertebrae, and their supraspinous ligament, and inserts into the outer third of clavicle, the outer border of acromion and lower border of spine of scapula.

Deltoid has its origin on the front of the outer third of the clavicle, the outer border of the acromion, and the lower border of the spine of the scapula-corresponding closely with the insertion of the trapezius. The deltoid inserts into the deltoid eminence of the humerus.

Description of Lesion: Supra-spinatus tendon ruptures are often different in size and vary in amounts, according to the case. The tear is triangular in shape with its base to the tubercle of the humerus. Because the tendon of the supra-spinatus forms a part of the joint capsule and at the same time forms the floor of the subdeltoid bursa, a complete rupture of the tendon causes the joint cavity to be continuous with the subdeltoid bursa.

Codman says—"That partial, or minor, ruptures are much more common than complete ruptures. With the minor ruptures operation is not necessary. They do not let the joint fluid pass into the bursa. The minor lesions occur more frequently in the younger people, while in older people we are more apt to have a complete rupture. The youngest demonstrated rupture of the supra-spinatus tendon was thirty-eight years of age." These partial ruptures of the tendon may occur in one of three locations. The broken fibers may be on the bursal side of the tendon,

*Presented before the Great Northern Railway Surgeons' Association at Glacier Park, Mont., June 30, 1934.

they may be on the joint side of the tendon, or they may be within the body of the tendon.

Accidents that May Cause: There is some difference of opinion as to direct violence or muscle spasm with perhaps the preponderous of the evidence in favor of the muscular spasm. There are a number of cases as reported in the literature as causing rupture of the tendon.

One case where a woman threw a rug over a line. Another case of complete rupture by throwing a stone out of a trench. Another, a man was pulling down a chain or a hoist, his hand slipped and in an effort to regain his balance the violent action of the supra-spinatus muscle ruptured the tendon. Codman's patient produced a rupture in an effort to regain balance when a saddle girth, which he was tightening, suddenly broke. Fowler reported an incident of a middle aged woman who slipped as she stepped onto a floor; as her feet shot forward she raised her arms to regain her balance and thus ruptured the right supra-spinatus tendon. Fowler reported another case of a young man who was not use to hard work. He was passing up cases of soda pop and after six weeks of work he noticed a dull ache and pain in the right shoulder. Fowler saw him six months later with limited abduction, atrophy of the supra-spinatus muscle, coarse crunch with crepitus, pain and tenderness. It would appear that repeated strains and repeated insults with rupture of a few fibers at a time, but often repeated, caused a rupture of the supra-spinatus tendon. Fowler also reported a case of a blacksmith starting down cellar steps, lost his balance, and in an effort to regain his balance, ruptured the supra and infra-spinatus muscles, making a gap of 2 by 2½ inches long through which the head of the humerus appeared at operation. Collins reported a case of a woman driving an automobile and a child suddenly appeared in the street in front of her. In avoiding the child and driving the car across the crub and into a tree she ruptured the supra-spinatus tendon.

The rupture of this tendon usually comes past middle life and usually in a working man. If trauma is the cause it must be of sufficient severity to produce a dislocation which has been reduced. In some the violence is clearly indirect as in the case of a woman who threw a blanket over the line. It may be that while she gave a history of direct violence that it was really the indirect violence or the contraction of the supra-spinatus muscle that caused the rupture. In other words, in case of a fall the patient probably always unconsciously suddenly throws his arms up to regain balance rather than the fall on his shoulder that he tells you he had. One can hardly fall to the ground without outstretching his arms. At the time of injury the patient feels a sharp pain in the shoulder. He may attempt to work afterwards, and does soldier through the day, and that night he does not sleep and in going over his history you find he has said—"I walked the floor all night." These cases may report to a doctor and even have an X-ray made and not be diagnosed. Codman says that he believes, that virtually every rupture of the supra-spinatus tendon is caused by contraction of the supra-spinatus muscle and rarely produced by direct trauma.

Symptoms: (Fowler) The history is important and especially when we realize that ruptures of the supra-spinatus tendon are so seldom recognized and promptly and efficiently treated. We find that there has been sudden stress on supra-spinatus tendon due to one of the causes cited above, such as sudden pain from abduction or wrench of the shoulder. This sudden pain may be quite misleading. The pain is sticking or cutting and may be so transitory that it may be missed or forgotten. Or it may be due to a dislocation of the shoulder joint which has been reduced, or again it may be due to long continued unusual over strain or over use. Some hours or days may elapse before pain bothers or disables. The amount of pain and promptness of onset may depend upon the degree of injury. If the rupture is complete the patient will not complete the days work. If there is a complete rupture of the tendon, atrophy of supra-spinatus muscle will be seen as soon as two weeks after the injury. Within a few days pain becomes more noticable and especially at night. These folks put in many restless nights. Each morning the patient states that he has suffered all night and cannot use the arm, yet to all appearances there is little to show for his complaint. The serious part of this is that this man may not again work for months or years. After a few days the patient can endure passive motion of the shoulder joint, through all of its normal movements but cannot perform active abduction. In active abduction there is cutting pain, worse as arm nears horizontal and patient drops arm to side owing to weakness and pain.

Remember at all times that a pure rupture of tendon has no X-ray findings, unless there is some tearing of bone at the insertion of the tendon into the bone. If you and your patient cannot make up your minds immediately after the injury and find three weeks afterwards that

there is no improvement, consider supra-spinatus rupture. A jog in the motion of passive abduction and a velvety crepitus over a tendon area beneath the acromion anteriorly, add greater certainty to the diagnosis. If on passive motion the deltoid looks larger than normal, this is due to the joint fluid being forced into the sub-deltoid bursa through a complete rupture of supra-spinatus tendon. Again, if there is a complete rupture of the tendon there will be no contractions of supra and infra spinatus muscles as you will find on the normal side.

When a strong laboring man after a severe fall or wrench alleges that he cannot raise his arm, cannot sleep on account of pain, refuses to work, lets his wife dress him, take him seriously even if he has negative X-ray and you can detect nothing on physical examination. He may have one of those obscure lesions in which the prognosis is worse than an out and out fracture of the surgical neck of the humerus. Do not be mislead by the mildness of the symptoms. If he cannot abduct the arm, and especially if after you have abducted the arm for him, he cannot hold it at the horizontal against moderate downward pressure, you can be sure enough of diagnosis to treat as a ruptured tendon. We must be sure that the patient is making an honest effort of abduction and that can be determined by feeling of contraction in deltoid muscle. Ridlon confessed—"That difficulties encountered in treatment of injuries of shoulder joint have always been more troublesome and more obscure than difficulties in treating all the other joints put together." Lovett once said—"No common injury is so badly treated, save possibly the spine, as injuries to the shoulder." Part of the reason for this unsatisfactory treatment would seem to be a lack of recognition of the fact that seemingly trivial trauma, may and frequently does, produce a tear in the structures of the shoulder joint and that the tear is often accompanied by little or no pain. This lack of recognition has come about in part because the shoulder is rarely operated on for relief, and painful shoulder not being fatal provide no autopsies.

Own Cases: Rolamdt—age 20, single. Was playing baseball on a Sunday afternoon, slid into second base breaking both bones in his right leg and injuring the left shoulder. The shoulder did not seem serious and did not draw attention until the second day, and then because of tenderness in the shoulder, with marked sensitiveness of the tubercle of the humerus, he was X-rayed and film No. 1 shows you the first X-ray taken of this man. Now you would have to look closely to even imagine any trouble there. This was the only picture taken at that time because the technician could not turn his arm without difficulty. He was sent back for more X-rays and films No. 2 and 3 show you that there is breaking away of bone of the supra-spinatus muscle. There is a definite fracture of the tubercle of the humerus. He was treated with abduction and put on an aeroplane splint.

Case No. 2: (Film 4) Boehmke, age 33. A woman who was thrown over the head of a horse. This happened some little time ago and one of my Orthopedic friends gave me the needed suggestions for putting this up on an aeroplane splint.

Case No. 3: (Film 5) Loose, age 52. This man was thrown from a grader and the only injury was to the right shoulder. This happened nearly three years ago and the man has all of the classical symptoms of the supra-spinatus tendon rupture, including the fluid going into the sub-deltoid bursa. He has inability to abduct his arm and he has a permanent disability of 33 per cent given to him by the Industrial Commission of Minnesota.

Treatment: If you are suspicious that there has been a rupture of the supra-spinatus tendon, or any injury of the bone at the insertion of the tendon, the arm is put up in complete abduction. This may be done in any method that will keep the arm horizontal. An areoplane splint makes a suitable dressing and allows the patient a lot of liberty. It would be far better to put an injured shoulder in abduction when there is little or no injury to the tendon, than to miss one that is frankly injured. If there is a complete rupture of the tendon, surgery should be done and the sooner the repair is made the more complete will be the recovery.

Summary

1. Rupture of the supra-spinatus tendon is more frequent than we have been accustomed to recognize it.

2. A more thorough study of the anatomy will be helpful.

3. Post-mortem dissections aid greatly in our knowledge of shoulder joints.

4. We should have in mind a picture of the lesion apt to occur in these injuries.

5. More careful examination and a better follow-up will solve many of these shoulder injuries.

6. If the symptoms of the supra-spinatus tendon rupture are kept in mind we will make fewer mistakes in diagnoses.

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A Successful Immunization Program in Sioux Falls

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NOT without a blush of shame, the medical profession is now realizing what has been lost through neglect of social medicine, public health education and practice during the last twenty years. In an effort to thwart further abuse, and hoping to be a help in the reclamation of professional right, as well as to avoid compliance with the lay administration of the South Dakota Immunization program, the physicians of Sioux Falls carried on their own campaign. It had been thought out for a long time, was fashioned after the so-called Detroit plan, and it is interesting to read of the Lake County Immunization program by Dr. R. S. Westaby in the JOURNAL-LANCET of November 15. Most of the city's physicians participated and the immunizations were given in their offices, preschool age children being stressed. The campaign ran two and a half weeks—free to those who could not afford to pay and for those who could it was optional from 50 cents to $4. Undoubtedly every man, woman and child in the city knew what was going on, having been advised through such media as carried home by the school children, co-operation of the P.T.A. and ministers, newspaper mention, radio announcements and billboard display. A theater aided by showing a short diphtheria film donated by a life insurance company. Eighteen hundred children were immunized. In addition to what Dr. Westaby has stated two phases of the Sioux Falls campaign might be worthy of further comment.

1. The gratifying aspect of the willingness shown by lay individuals, groups and commercial houses, from small local ones to large concerns in distant New York state, in giving their time and service in the interest of this campaign. It is unbelievable the appeal that health work has, especially when coupled with child welfare, and this, no doubt, explains the success of the lay individuals who have developed themselves by these means during the last two decades. It is too bad, and a sad commentary on the medical profession, that it has neglected at least the control of leadership of these activities.

2. Another thing done in this Sioux Falls campaign that might be of interest was to evaluate the work in dollars and cents—the one language that folks understand. The regular immunization fee was quoted as $10.. A liberal deduction of $2 each was made as the average amount collected, leaving $8 in service given free on each case, or for the 1,800 a total of $14,400 as a public donation by the physicians to the health welfare of the city. These figures were made public through a newspaper article and a letter stressing the value of the service was sent to the Chamber of Commerce and the Community Chest.

This immunization program was administered through the Seventh District Medical Society, in the enforced absence of its president, Dr. Forsberg, by its acting president, Dr. William E. Donahoe, and secretary, Dr. H. R. Hummer.

Shoulder Joint Injury, Rupture of the Supraspinatus Tendon

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7. Treatment may be surgical or with abduction splint.

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Trichinosis As a Public Health Problem

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IN CONSIDERING Trichinosis as a public health problem, it would be well to examine, first of all, the disease itself, in man and animals. Trichinosis is primarily a disease of animals, principally the hog and rat. Man is extremely susceptible, usually becoming infected by the eating of trichinous pork. The affliction is of ancient origin, and, it seems not unlikely that the Hebrew prohibition against pork was due to its prevalence. In 1832, Teidman in Germany observed encysted forms of organism in infected muscles tissue. In 1860, Zemker discovered both the intestinal and muscle form of the parasite in a man, establishing their connection with the disease in the animal. He pointed out its seriousness and frequent fatal results.

Virchow was the first man to describe the life cycle of the organism as it is known today. Trichina, or Trichinella spiralis, is a genus of the nematode parasites. The adult female form is three to four millimeters long. It is white and slender and tapering towards the anterior end. Adult males are half as long. The parasite goes through various forms while in the intestine. Embryos are .1 millimeters long, but after their migration from the intestine through the lymphatics and blood stream to their destination in muscles, they grow to .8 mm. to 1 mm.

Cysts consist of one, two or more embryos which have become sexually differentiated and coiled up in a calcareous covering. The life cycle begins when the infected meat is ingested in which cysts are present. Gastric juice dissolves as cysts and the worms are set free. They pass into the intestine where they develop into adults during a period of four weeks. After copulation, the males pass out of the intestine and die. The females begin to discharge within a few days and continue the process for a month or more, after which they, too, pass out of the intestine and die. The embroyos penetrate the intestinal wall entering the lymph and blood streams where they wander to different parts of the body, becoming located in the muscles after a week or ten days. In man they become located in diaphragm. Muscles of the larynx and tongue, and in the abdominal and intercostal muscles of the back. It is this period, during which the larvae migrate through the body to the various muscles, which is critical. If the man or animal can endure the irritation and inflammation caused by the millions of worms migrating through the body and the toxins produced, the host will withstand the disease. The parasites are then encysted in the muscles, retaining vitality for a year or two longer. The life cycle is then begun over again when the encysted meat is eaten. The disease in animals is confined principally to the hog and rat, although recent outbreaks indicate its presence in wild animals, notably the bear, badger, fox and mouse.

Horses, sheep and cattle are quite refractile to the disease, while the laboratory animals, such as the rabbit and guinea pig, are susceptible. In man, the infection usually comes from eating pork; thus the disease is confined largely to those countries where pork or pork products are eaten or insufficiently cooked. Germany and the United States report the most cases. The disease itself presents no features which offer a definite clinical picture. It must be pointed out that the ingestion of infected meat by man does not always lead to the disease. There may be so few cysts in the meat that only a few embryos pass from the intestines to the muscles, with the result that no signs or symptoms are observed.

The infection may be divided into three periods. The first, or first week (the invasion period, in which the worms develop in the intestine) is marked by a loss of appetite, nausea, vomiting and diarrhea. The second period, or period of dissemination, lasts from nine to fifteen days. During this time the embryos attack the muscle walls, causing severe muscular tenderness. Fever and pulmonary symptoms are common in this period. The third period is that in which there is encystment and regression. It lasts until the patient recovers. It is rather severe with edema of the eyelids, sweating and increased temperature. There may be various signs of nervous system involvement. Hussin and Diamond report a case in which the disease produced a picture of non-suppurative encephalitis. Kerneg's Sign is usually present.

Of the laboratory signs, the leucocytosis, which may reach 30,000, is important. A special feature is the extraordinary increase in the number of the eosinophiles. Albuminuria is fre-

quent. The intensity and duration of the disease in man varies, of course, with the grade of infection. In mild cases, the duration is from 10 to 14 days, while with the severe forms convalescence is not established for six or eight weeks, or more. There are typically many variations as to the symptoms that may be produced. In one case reported, there was a hypotension of 44 systolic and 18 diastolic with no signs of cardiac failure. There may be a generalized adenopathy. The disease may be mistaken for Typhoid, Meningitis, and frontal Sinusitis.

Positive diagnosis is made by the finding of the encysted trichina in the muscle, in the stools, blood or serous cavities. It is to be noted that children either escape the infection or when infected have the disease in light form.

The question now arises: Is Trichinosis a public health problem? In answer, we must first consider the prevalence of the disease in animals, which may give it to man. How common the disease is in hogs in difficult to determine. However, we find that in 1880, American pork was excluded from German markets because it was so frequently infected with Trichina.

This led to a rigid meat inspection by the United States Department of Agriculture. From 1898 to 1906 a microscopic study of all meat was made. Trichina was found present in 1.95 per cent of American pork. However, this could hardly be considered to be an accurate figure, since it is now recognized that a microscopic study is not always thorough. Microscopic examinations consist of taking a bit of muscle from the tongue and diaphragm, the most common sites for the encysted trichina. Williams says that 6 per cent of the American pork was infected. In Germany it was found that 5.5 per cent of the swine were infected. It is known that rats are responsible for propogating and spreading the disease among hogs. In Boston, 10 per cent of the rats around slaughter houses were found to harbor Trichina, but in rats that were found around sewers, 76 per cent were found to be infected. This seems to show that such animals have much to do in spreading the disease among hogs. Chandler points out that symptoms of the disease in living hogs are much less evident than in man.

From the cases reported of men who have contracted the disease from eating bear meat it is evident that the carnivorous animals are affected.

Since the disease has been know it has been considered one of small morbidity. Hull states that the extent of the infection is not great. United States public health bulletins report 475 cases in the years 1929-1930. Numerous small outbreaks occur in the United States but no large epidemics such as in Germany, in which there were outbreaks of 337 and 250 cases. Almost every state reports cases. California reported 197 in the two-year period of 1929 and 1930. Iowa reported only one case in that period. This does not show a great incidence of the disease, but it is possible that there are many cases which are not recognized because of too indefinite symptoms. Williams in 1900 realized that perhaps the cases did not give a true index of the incidence. To prove this he took pieces of diaphragm and tongue from 505 unselected necropsies, examining them for Trichina cysts. These patients had all died from other causes. He found the organisms present in 5.3 per cent of the cases. Frank B. Queen in 1930 secured diaphragms from 344 consecutives necropsies in Rochester, N. Y., and examined for the presence of larvae by the artificial digestion of 50 Gms. portions of the muscle. Infants under one year of age were excluded. He found 17.5 per cent were positive. In another series of necropsies from Boston 27.6 per cent were positive. None of the Rochester patients who were infected had a history of Trichinosis but some had given vague "rheumatic pains." Queen concludes that "there are many ill-defined cases that are being overlooked at the present time." If both Williams' and Queen's reports are to be considered accurate, it is plain that the disease is on the increase in the United States. The public health problem then consists of a means of recognizing the infection early and a method of treating and preventing the disease.

It is realized that the diagnosis of Trichinosis in man is difficult and is largely based on clinical symptoms, which at best are not conclusive. A direct diagnosis can be made in some stages by finding the parasite in stools, blood or pieces of muscle, but such methods are limited in each case to a particular stage of the infection and the chance distribution of the larvae in the excised muscle. Even when it is recognized by this means it is too late to treat the case. It is very difficult to find the parasite in the stools as the patient usually comes to the doctor at the stage of invasion, at which time the organisms have left the intestinal tract. It is also difficult to find the encysted larvae in a biopsy unless the infection is widespread.

George W. Bachman of the Department of Hygiene and Bacteriology of the University of Chicago has devised a serological test for the

detection of the presence of the parasite in a host. Earlier work in this field was done. Romanovitch, Strobel and Ducas succeeded in detecting the parasite in the hog by complement-fixation, but failed to demonstrate the presence of precipitin antibodies. Their failure according to Bachman, was due to the fact that they used saline, alcohol or ether extract of the heavily infected muscle as test antigens. Bachman has devised a method by using the isolated parasite as test antigens instead of using the heavily infected muscle. He has simplified the technic making the test very practical. In his experiments, Bachman made tests on laboratory animals and human serum. While these first experiments are not definitely conclusive, he found that precipitin tests while giving a good definite reaction were not detectable until the thirteenth day of the infection. By this time the larvae have already been liberated by the adult intestinal worms and have penetrated the striated muscles. This stage is past the critical point of the disease as the patient has succumbed or is convalescing. For practical purpose, a test should give results during the earlier stages. Later in 1929, Bachman did further work on this precipitin test using a different antigen. He found that the serum reacted positive in from five to twenty days after infection. Thus it would be possible to discover the disease early in only a limited number of cases. Hunter collaborated in these tests and concluded that the precipitin test offered great possibilities in the diagnosis of cases of quite long standing. In addition, it may become an important part of the diagnosis of meat inspection for Trichinosis. It would be possible for hogs to be given this test before slaughter. However, since the efficacy of the test is not definitely proven no such measures could be advised.

Bachman, not satisfied with the results on the precipitin tests as a means of diagnosing Trichinosis, developed an intradermal reaction test. This consists of injecting .1 cc of 1-10,000 and 1-500 dilution of antigen (dried weights of powdered Trichinella Larvae) into the skin. He carried on experiments with the rabbits and guinea pigs. A great majority of the animals infected with Trichinella showed a local skin reaction specific in character following the intradermal injection. All the controls were negative. Typical skin reactions occurred as early as the second day, but due to the fact that the local skin reaction might have caused a local hypersensitivity, Bachman said it was safer to conclude that typical reactions occurred in the first week. He says, "As a method of diagnosis the skin reactions appear twenty to thirty days before the precipitins are demonstrable in the blood stream."

Intradermal reactions were tried at the university of Rochester College of Medicine on 38 cases of proven Trichinosis, eleven cases of diagnosed Trichinosis and 129 control individuals. Positive reactions were gotten in 87 per cent of the proven cases, 46 per cent of the diagnosed cases and 11 per cent of the control individuals. Conclusions were drawn that while reaction was positive in a large number of the proven cases the test could not be considered specific because of such high percentage (62 per cent) of positive reactions in Trichuris trichuria or thread worm infections. Thus it seems that although these tests which seem quite satisfactory in a large percentage of cases there is some doubt as to their diagnostic properties. Further work must be done before they can really be accepted as accurate diagnostic tests.

The second aspect of the public health problem in Trichinosis is the treatment and prevention of the infection. It is fairly well agreed by all authorities that once the parasite has gotten into the stomach there is no specific treatment for the disease. Treatment is purely symptomatic. Chandler points out that a search for a specific remedy is futile for even the adult worms in the intestine are much more difficult to dislodge or destroy than any other intestinal worms since they bore so deeply into the intestinal wall that ordinary anthelminthics do not effect them. The infection is seldom recognized before the larvae are thrown out. Chandler also says that an active immunity could be built up as in typhoid if the trichina could be isolated, ground up and injected. However, the disease is not so common or difficult to prevent to make promiscious immunity justifiable, even if possible.

Immune serum has been tried at various times. Salzer in a study of fourteen cases of Trichinosis reported that immune serum proved to be of remarkable curative value in that there was a drop in temperature and eosinophilia. In some experimental animals, the injection of convalesence serum gave almost complete prophylactic results. Animals fed infected meat within twenty-four hours after the serum developed a mild form. After this the animals appeared to be immune. This is one of the few reports in the literature of a successful remedy for the infection.

Other forms of treatment that have been tried are thymol by intramuscular and subcutaneous injections. Glycerine, Arsphenamine and other

arsenicals. Most, in fact all, have brought little aid in the treating of the disease, which compels the conclusion that control of the disease must largely depend upon prevention. It is known that Trichinosis is not transmitted through the feces, that encysted dead trichinae are not capable of developing when meat containing them is ingested. Ruffensperger and Swartz have shown that dead or non-viable trichinae produce no ill effects even when ingested in large numbers. There-fore prevention of infection in man depends on the prevention of the living encysted forms.

Prevention may be practiced in five different ways: (1) prevention of the infection in hogs; (2) inspection of meat; (3) destruction of the parasite by refrigeration; (4) instructing the public of the proper methods of cooking pork; (5) warning the public of the possible sources of infection.

The prevention of the infection in hogs is hard to accomplish, since it is difficult to recognize the disease when present. However, much could be done to prevent its prevalence in hogs, if food which is known to be potentially infected is not fed to them. Dead rats found around slaughter houses and the refuse from slaughtered hogs is a big factor in the spread of the infection. At the present time, federal meat inspection regulations include no inspection for this disease. Systomatic microscopic examination of pork by sections from the diaphragm and tongue of all animals searching for encysted Trichina was tried in this country but given up as impractical and uncertain. It is enormous and prohibitive expense and does not afford protection.

During the years 1881 to 1898 when Germany had a rigid method of microscopic inspection of pork for trichina, there still occurred 2,042 cases with 112 deaths from meat that had been examined and released for trade as free from trichinae. Thus it gave false security. Unless something will develop of the Bachman intradermal test meat inspection aids little in the prevention. The next factor in the prevention is proper refrigeration. Ranson of the Bureau of Animal Industry and the Department of Agriculture has carried out extensive investigation of the effect of heat and refrigeration on trichinae in meat. It was found that trichinae are not so resistant to long exposures of cold below the freezing point. As a result the federal meat inspection authorities have adapted requirements that all pork that is to be used in the preparation of food products and consumed raw must be exposed to a temperature of —15 c. for at least 20 days or else heated to 60 C. This is one of the biggest steps the Department of Agriculture has made in the prevention of Trichinosis.

Probably the most important thing in the prevention of the disease is the proper cooking of pork. Ranson has done much in the study in this field. As an example, he found that it took 2½ hours to raise the temperature in the center of a 15 pound piece of pork from 78 to 137 F., when the water on the outside was 180 F.

The United States Department of Agriculture warns all persons "not to eat pork whether it is federally inspected or not until it has been properly cooked." A temperature of 55 C. quickly destroys organism. Meat cooked in packing plants is required to have a temperature of 137 F. as a minimum which gives a satisfactory margin of safety. The last, but equally important method of prevention of the disease is by informing the public of the proper method of preparing meat, particularly when it is from local butcher shops. The proper cooking is the most certain and safest of all precautionary measures and it cannot be stressed too strongly before the public.

It should be pointed out that in the United States most of the local outbreaks can be traced to a small slaughter house or to a slaughtering of one or more hogs by a family for its own consumption or by a local butcher for his own trade. Under such conditions the people who partake of the meat get a large dose of trichinous material, while in the large slaughter houses the infected meat is very likely to be mixed with a great deal of meat from other hogs and persons partaking are less apt to ingest a large quantity of the trichinous material. By warning the public of the dangers of buying such meats perhaps many of the outbreaks could be prevented. The public generally is unaware that such serious results can come from locally butchered pork, and if better informed there would be fewer happenings of this kind.

Conclusions

Trichinosis is a disease produced in man by the mematode parasite. Trichinella spiralis. It can infect most all the higher animals but concerns us in affecting the rat and hog because by this means it is transmitted to man.

Trichinosis in man can produce a serious and disabling disease with symptoms which are none too characteristic. Its course in children is usually light compared to adults. Apparently the disease is on the increase in United States.

Various tests have been devised to aid the diagnosis of Trichinosis but none as yet are entirely satisfactory. Thus to recognize the disease, phy-

sicians must keep it in mind and attempt to obtain a history of eating pork which might have been infected.

Treatment of the disease is wholly unsatisfactory in spite of the fact that many remedies have been tried, notably serum from animals convalescing from Trichinosis. Prophylaxis is by all means the best method of controlling the disease. This may be accomplised by:

1—Prevention of infection in hogs.

2—Inspection of meat.

3—Destruction of the parasites by refrigeration.

4—Proper cooking of the pork.

5—Warning the public of the disease and how it is most frequently contracted.

These methods would go far in the prevention of Trichinosis, thereby ridding the country of an unnecessary affliction.

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Cerebral Hemorrhage

(Continued from Page 37)

he felt "a little dumb in the head." About April 15, 1934, he began to notice dimness of vision in his right eye, along with a continuous dull ache in the right temporal region, radiating into the right occiput. At first this was intermittent, but recently it has become constant. Since May 1st he has developed some pain in the right shoulder region. He has a feeling of pressure on his right eye, and this occasionally makes him a little dizzy. During the past month he had some polydipsia and polyurea. He is doing his daily work on the farm. His bladder and sexual functions are normal. The physical and neurological examinations did not reveal any abnormal findings except for two small retinal hemorrhages in the upper half of the right fundus. His hemoglobin was 78 per cent; blood pressure, systolic 226, diastolic 110; urine, acid, 1022, no albumin, no sugar, no casts. The blood urea was 22 m.g. Blood sugar, 72 m.g.; createnin 1 m.g. Blood Wasserman negative. The spinal fluid was clear, pressure 10 m.m. Hg. It contained a trace of globulin, two cells, a negative Wasserman, and a negative colloidal gold curve.

Although this patient presents no evidence of any cerebral pathology, the marked hypertension, the occipital and temporal headaches, and particularly the retinal hemorrhage, are definite danger signs of an impending apoplexy and offer a serious prognosis.

Summary

A brief review of the etiologic factors of intracranial hemorrhage and some of the theories are given.

The symptomatology and treatment are briefly outlined.

Case reports illustrating some of the clinical syndromes are presented.

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Spontaneous Hypoglycemia (Hyperinsulinism) With Case Reports*

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RECENTLY an author,[9] in presenting some medical literature, suggested the importance of more frequently bringing to the attention of our profession the practical and common-day problems in diagnosis and treatment. Because of the increasing interest in the subject of hypoglycemia in recent years, I wish to present the following discussion and case reports which seem to be material for practical application.

This "entity" (and it may very well be called such)[2] is irregularly named spontaneous hypoglycemia or hyperinsulinism in contrast to its direct antithesis, diabetes mellitus. As far as medical science can carry us on this subject at the present time, there are two general types of this disease. In one type, we find cases having a true hyperinsulinism due to hyperfunctioning tumors of the pancreas which is relieved by removal of the tumor. In the other type are included cases similar to the former in symptomatology but without demonstrable abnormalities of the pancreas.[5] It is quite necessary that a definition of this disease be lengthy and inclusive, and the one given by Briggs[1] is of that nature: "It may be well defined as a specific disease characterized by vague attacks of neurological bearing that vary from mild sensations of uneasiness to grand mal seizures or even narcolepsy, with relief from these attacks occurring upon the administration of carbohydrate, the diagnosis clinically depending upon a low blood sugar during the attacks, and is caused anatomically by tumors or hypertrophy of the islands of Langerhans, or other endocrine disorders."

A word as to the frequency of this entity should be mentioned. In recent years many articles and discussions of this subject have appeared in the literature[1,2,4,5,7,9] which would seem to indicate a gradual increasing interest in a very deserving condition. It hardly seems true, as Harris tends to suggest,[2] that this disease is almost as common as hyperglycemia (diabetes); nevertheless, many cases have been reported and many more would be discovered if thorough study of suggested symptoms was carried out. Too often have cases of petit mal and grand mal seizures been wrongly diagnosed idiopathic epilepsy, and bizarre neurological and psychiatric cases allowed to slide by without sufficient blood study of the patient.

*From the Healy Law Woutet & Moore Clinic.

Some Possible Factors

As in many other obscure conditions, one cannot begin to cover the etiology of this subject in a paper of this sort, but I can mention a few of the possible factors involved. It seems quite probable that neoplasms of the pancreas may be just as important in the etiology of hyperinsulinism as are neoplasms of the thyroid in hyperthyroidism. The most outstanding case of this nature is that reported by Wilder, Allen and Robertson.[10] This patient died, and at autopsy an extract of the metastatic nodules in the liver was prepared. The substance then injected into rabbits showed definite insulin activity. Focal infections of the mouth, tonsils, colon and prostate, and likewise, general infections may be the primary cause of a pancreatitis that preceeds hyperinsulinism. A diet deficient in vitamins has also been mentioned as an underlying factor in the cause of this pancreatitis. In some cases reported, a familial tendency has been suggested to exist as it does in diabetes. Furthermore, emphasis has been placed on other factors outside of the pancreas as being just as important in the etiology of spontaneous hyperglycemia.[1] Disturbances of the heptogenic glycogen storage, excessive carbohydrate diets, mental strain and worry, influences of the pituitary, adrenals and other endocrine glands are factors that may cause an uncontrolled insulogenisis, thereby causing the attacks.

The Symptomatic Picture

It may be said of the symptomatology of this disease that it is decidedly protean in character, bringing forth many bizarre manifestations, the most common of which are the convulsive seizures. In the mild form of hyperinsulinism the attacks are characterized by excessive hunger, weakness, nervousness and anxiety one or two hours before meals. In addition, there may be trembling, flushed face, profuse perspiration and tachycardia, all of which may be exaggerated by exercise, overwork and mental strain. Insomnia, fatigability, and nausea are frequent complaints, and sometimes palpitation, vertigo, and visual dis-

turbances are mentioned. In these cases of mild hyperinsulinism the fasting blood sugar usually ranges from 75 to 60 milligrams per hundred cubic centimeters of blood. In the moderately severe type, these same symptoms are more exaggerated, and the blood sugar may be between 60 and 50.

In the severe cases of spontaneous hypoglycemia, most of the attacks are manifested by unconsciousness either with or without convulsions. In some of the severe cases the diagnosis of epilepsy was made, but was abandoned when the attacks were found to be associated with hypoglycemia. This is true of the case which I am reporting herein. Abdominal pain has been mentioned in some of the reports to the extent of simulating appendicitis, gallbladder disease, duodenal ulcer, etc., so that surgery has been done without relief of symptoms. In the event of convulsions, the seizures do not usually last long, and are quite typical of epilepsy except that they may be aborted by the administration of carbohydrate. Physical examination during the interval is usually negative and reveals no sign of disease.

In the matter of diagnosis the disease may be tentatively made on the basis of the symptoms above mentioned. If the patient is relieved by a low carbohydrate and high fat diet with frequent feedings, a diagnosis may be assumed, but the only means of definite diagnosis is by the use of blood sugar studies showing a hypoglycemia. The sugar tolerance test is valuable in this connection showing a typical hypoglycemic curve. If a fasting blood sugar is below 70 mg. per hundred cubic centimeters, it is without much doubt a case of hyperinsulinism. Fasting blood sugars in these cases are not always low, and, therefore, frequent and repeated studies should be made before the disease is eliminated in suspected patients.

Diet for Functional Cases

The treatment of spontaneous hypoglycemia depends upon the degree and character of the case. In the so-called "functional" cases, dieting offers good results with intelligent co-operation of the patient. This diet consists of one low in carbohydrate and high in fat to be taken in from five to seven meals or feedings per day. This diet should be very much the same as that used in the ordinary diabetic patient, that is, about 2,000 to 2,400 calories per day with 90 to 120 grams of carbohydrate, 65 to 70 grams of protein and the rest made up of fat. On first thought a diet low in carbohydrate content seems unreasonable in an attempt to correct a hypoglycemia, but it is more rational when we think of the theory upon which such treatment is based. Too much carbohydrate tends to stimulate the secretion of more insulin; consequently, it is thought that a smaller amount of glucose administered more frequently during the day will better maintain a higher dextrose level in the blood. Other investigators[6] sugguest a diet high in carbohydrate in treating true hyperinsulinism, but the most important feature in the medical management of these cases is the idea of frequent feedings. John[3] suggests the use of insulin in the treatment of these cases with the idea that exogenous insulin will relieve the stimulation of the pancreas and thereby reduce hypersecretion of endogenous insulin. In the severe cases that cannot be controlled by dieting, a hope of cure is offered by surgery; that is, partial resection of the pancreas or removal of neoplasms or insulomas. Partial resection of the pancreas in the so-called functional cases has not given permanent benefit.

Spontaneous recovery from the attacks usually results, but a number of deaths have been reported from hypoglycemic coma, in some of which unsuspected adenomas of the pancreas have been found at autopsy. Harris[2] suggests the possibility of some cases of hyperinsulinism passing into hypoinsulinism (diabetes) due to exhaustion of the islet cells.

Case Report

Male, age 28, who came to us for the first time in September, 1933, with the complaint of convulsive seizures which he had been having with increasing frequency for the past five years. The interval between his first two attacks was six months, and at the time I first saw him they were as often as two or three in one day. Many of the seizures were nocturnal, although many of them would occur just before meal-time. The convulsions as described were typically epileptiform in character, and this I know to be quite true since he had an attack one day in my office. He also complained of nervousness, retrogression of memory and "much gas on his stomach." At night he would often get out of bed and do peculiar things that he did not remember. His past history is negative up to the time of his first seizure. A very interesting point comes out in his family history, i. e., that his father had "epilepsy" from the ages 45 to 60 and that it cleared up the last two years of his life. This patient had visited several physicians and outstanding clinics before coming to us, and each time he was diagnosed idiopathic epilepsy with the usual prognosis. In fact, the same thought prevailed when he first came to us.

Physical examination on his first visit was normal except for a ruddy, moist, soft type of skin and a slight tremor. Blood pressure was 134 systolic and 80 diastolic. He was well nourished and talked with more than average intelligence. Urine examination was negative; hemoglobin 95 per cent (Sahli); red count 4,780,000; white count 8,950, with 65 per cent polymorphonuclears and 32 per cent lymphocytes; and Wassermann, negative. At this time we urged remaining in our city, preferably at a hospital, for further study, but because of no co-operation on this suggestion, we sent him home on an epileptic regime (ketogenic diet, dehydration, and luminal). On this schedule he improved some, but he still had quite numerous attacks, sometimes consisting of only nervousness and a peculiar feeling in the epigastrium when hungry. Also, he was quite melancholic. A blood sugar taken at 2:00 P. M., 2/13/34, was 70.8 mgms.

On February 19, 1934, he returned to Grand Forks for further study and hospitalization. Physical examination at this time revealed nothing more. A fasting blood sugar taken the next day was 69 mgms. per 100 cubic centimeters of blood. A sugar tolerance test at this time gave the following readings: fasting, 65 mgms.; first hour, 175; second hour, 105; and third hour, 59. On one occasion the patient felt nervous and weak while in the hospital, and a blood sugar taken at this time was 57 mgms. per 100 cubic centimeters of blood. He had no convulsions during his four days in the hospital. His basal metabolic rate was a plus four. Spinal puncture at this time showed normal findings, including Wassermann and colloidal gold tests. A diagnosis of spontaneous hypoglycemia was made and the patient placed on treatment of a high fat and low carbohydrate diet with frequent feedings and small doses of luminal. On this regime he has been very much improved, although he still has an occasional seizure and is quite melancholic at times. His blood sugar on two occasions since the beginning of this regime has been 111 and 89. At the time of the writing of this paper, I may state that he has had only two convulsive seizures in the past three months.

Another interesting case that has come to our attention recently will be reported briefly as follows:

T. T., female, age 36, came in June 23, 1934, complaining of convulsive attacks beginning nine years ago, occurring in frequency from two weeks to four or five months apart. She again presented herself September 19, 1934, at which time she was four months pregnant. Further history revealed that she was excited and nervous, and that sometimes this nervousness was relieved by taking a cup of coffee with a cookie; also, that these nervous spells were more likely to occur after doing some hard work. Physical examination revealed nothing unusual other than the findings of her pregnancy. A sugar tolerance test showed a fasting blood sugar of 65 mg., and at the end of the third hour it was 60 mg. A diagnosis of hypoglycemia was made and the patient placed on a high fat, low carbohydrate diet, with frequent feedings. One month has elapsed since the beginning of this treatment and she reports no more nervousness and no seizures. Her blood sugar at her last visit was 82 mg. Further observation of this case will be of interest both from the standpoint of the hypoglycemia and because of the associated pregnancy.

Comment

In the consideration of this subject, hypoglycemia, we are necessarily in the dark from the standpoint of etiology because of the many factors involved in the metabolism of carbohydrates such as the amount of carbohydrate ingested, the amount absorbed, and the production and utilization of glycogen by the different tissues. Nevertheless, at present, we may say that diagnosis is the most important problem in hypoglycemia. Once the diagnosis is made, one may make an attempt at determining the possible etiology to find it a very difficult problem. If an excess of insulin is suspected, it may be due to tumor or hyperplasia of the pancreas or even a functional hyperinsulinism; if there is a lack of opposing secretions, then we must think of disease of any of the several endocrine glands; lack of glycogen if considered, would throw suspicion on a possible destruction of the reservoirs such as is reported in the cases of fatty metamorphosis of the liver[5]; then also, a possibility of interference with the regulating center from other nervous disease may result.

In the consideration of the cases reported in this paper and elsewhere, it can be clearly seen that many of these patients may be benefited by thorough study. If failure to respond to medical treatment is encountered and if dietary and endocrine factors may be reasonably well ruled out, then the patient is entitled to exploratory laparotomy as suggested by Rynearson and Moersch[6]. Further results must by necessity await the intensive study now being given to this obscure malady.

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New Values in Student Health*

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THE American college student body forms a group which exists in a physical and emotional environment quite distinct from anything with which we are familiar elsewhere in our order of society.

The individual who succeeds in gaining admission to this academic group finds himself removed from his familiar home environment where he has made, usually, a satisfactory adjustment emotionally, where he has been accustomed to family protection, where defense mechanisms have been developed to take care of most of his conflicts and where danger from physical as well as biological enemies has by experience and immunity been reduced to a minimum.

Snatched from this familiar haven and placed in our entirely new environment, perhaps an entirely different climate, the college campus, where unaccustomed physical dangers present themselves, where strenuous competition in intellectual, social and physical activities challenge him to exert his every ounce of energy, he finds his old defense mechanisms ineffectual. Parental protection and assistance are hopelessly out of reach, new biological enemies appear to which his old immunities are only weakly antitoxic. Habits of eating and sleeping are peculiar and his whole physiology must readjust itself in a somewhat hostile atmosphere. The adjustment to this unusual environment and the experience of life and work in it give rise to many pathological, physical and mental conditions. In this predicament we find our average American college student.

The First Student Service

In this predicament in 1861, President Stearns of Amherst College found his students. He decided that the situation merited treatment and established a Student Health Service under the direction of Doctor Edward Hitchcock. This was the first organization to systematically deal with the ills that are peculiar to the American college student. His idea spread very slowly but 60 years later the American Student Health Association was founded under the leadership of Sundwall, Storey, Raycroft, Forsythe, Ritenour, Haven Emerson and others. These men came to the realization that the college campus presents a demand for medical practice, preventive, curative, and educational, that is quite distinct from the accepted practices in the field of general medicine and official public health. As a result of their vision in this new field of endeavor there has arisen a new medical specialty, student health. In one sense the field is highly specialized and in another it is broadly general and a clear cut definition in the mind of every director of student health will enable him to envisage effectively his responsibilities and his opportunities for the advancement of this phase of medical science.

This field is highly specialized in that it deals with a narrowly limited age group, well endowed with health and intelligence as compared with general population groups. The field is broadly general in that it includes the duties of substitute parent, family physician, specialist, preventist and teacher. The whole endeavor is flavored with the educational incentive in all its ramifications.

Student health is a new specialty. It brings under observation factors never before studied. It opens up new avenues of approach to the solution of many health problems whose significance has not been appreciated in the past. In this new enterprise we find opportunities for the study and correlation of facts and whole sciences, which have hitherto been valuable in their own sphere but have lost much of their practical social value because there were no means of arriving at their full interpretation. Research in physical education, hygiene, clinical medicine, and public health is currently achieving new objectives. New avenues of social service are being rapidly opened. In the realm of science generally and especially in the field of the biological sciences relationships are of greater significance than isolated factors. Progress is bound to be both stimulated and more effectively directed by the natural impact of one branch upon the other. The essential unity of all problems relating to human health and discoveries growing out of their study finds full opportunity for expression in the work of the department of student health. Constructive ideas conceived and nurtured in one branch, let us say physical education, can be adapted and applied to the full measure of their potential usefulness in allied fields. Developments and discoveries in any direction can be adjusted

*Presidential Address, Fifteenth Annual Meeting, American Student Health Association, New York City, December 27, 1934.

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to throw a broad as well as intensive light. In the student health laboratory one may study the effects upon carefully selected and easily controllable material, of propositions germinated in each of the sciences concerned with health. Here lies a field fertile in its possibilities for planning, administering, and testing in a practical way the most significant correlations. That it has long been neglected makes it all the richer in its potentialities.

Issue Being Forced

The ecomonic aspects of modern day medical care form a subject of vast importance to every individual. The present financial condition of American families is forcing this issue to the front where in the near future decisions of immense and far reaching importance will have to be made. Many aspects of the old system of medical practice are admittedly bad and will be eliminated. Many proposals for the new order are equally bad and cannot be incorporated permanently in a plan that will satisfy the American public. Some acceptible form of medical practice will certainly emerge and will be adopted by a large majority of the public. The one-quarter of a million college students who go out annually from our institutions of higher learning, many of whom have experienced four years of a satisfactory medical program, will in a large measure formulate our future policies. Currently it is becoming increasingly difficult for many of the modern graduates to find in our present system of private medical practice the opportunity to experience what they have become accustomed in college to consider a hygienic conduct of life. Organized medical care has made vast strides in the field of industry. Indeed many schemes of industrial medicine are very successful. None, however, have been as efficient, as economical, and at the same time as comprehensive as the first class college Student Health Service. None have been fabricated on the framework of education and prevention, and without these at the heart of its structure no plan can become ideal. The program of the American Student Health Association might even be chosen as a pattern for the structure of future medical care programs in this country.

Currently Student Health is assuming greater importance than had been anticipated by the most optomistic prophets in our struggle to understand health in its broadest sense and in our battle against those forces which are antagonistic to health. But the greatest values to be derived from our work will be realized only after many generations of students have passed through our doors and have fallen heir to the pathology of advancing years. Our most significant contributions lie in the future.

Spontaneous Hypoglycemia (Hyperinsulinism) With Case Reports

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The
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The Official Journal of the

North Dakota State Medical Association
South Dakota State Medical Association
Montana State Medical Association
The Hennepin County Medical Society
The Minnesota Academy of Medicine
The Sioux Valley Medical Association
Great Northern Railway Surgeons' Assn.
American Student Health Association
Minneapolis Clinical Club

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MINNEAPOLIS, MINN., JANUARY 15, 1935

COMING EVENTS

The Sioux Valley Medical Association will hold its annual session this year in Sioux Falls, S. D., on January 22 and 23. Organized nearly forty years ago this society has served the profession of the territory adjacent to the intersection of the states of Iowa, South Dakota, Minnesota and Nebraska faithfully and well. Today it is stronger in numbers and better in scientific effort than ever. Being an independent unit it does not concern itself with the problems which properly belong to the state and district or county societies but devotes its time to good clinical programs in which recognized teachers give formal addresses and utilize the material provided by local members for the purpose of clinical demonstration and illustration. The social side is provided in a banquet which is to be held on the evening of the first day, following which there will be a public meeting in the Coliseum. Further details of the program appear elsewhere in this issue. It may be safely stated that no one will make any mistake in arranging to attend this meeting. A large amount of work has been done to make it very successful. The program and banquet will be held in the Cataract Hotel.

A very important event to which we can now begin to give attention is the annual session of the Minnesota State Medical Association, to be held in Minneapolis on June 24, 25 and 26. Extensive plans are now well under way which will insure the success of this occasion on a scale never before undertaken. The Municipal Auditorium has been engaged and will house all the scientific and commercial exhibits and provide an adequate meeting headquarters for audiences of any size under the most favorable circumstances. The chairmanship of the local committee of arrangements has been entrusted to Dr. James K. Anderson, which is an ample guarantee that nothing will be overlooked. Dr. Anderson has appointed sub-committees to care for every phase of activity and readers of the JOURNAL-LANCET will be kept fully informed.

G. C.

A TUBERCULOSIS-FREE STATE

The veterinarians and farmers of the state of Minnesota may be justly proud of their accomplishments during the past 15 years.

The campaign to eradicate tuberculosis among cattle began then, and although lack of funds handicapped the work for a time, it was pushed to completion during the past two years through the aid of federal funds. The United States Department of Agriculture has now officially designated Minnesota a cattle tuberculosis-free state which means that tuberculosis is confined to less than one-half of one per cent. Farmers will not only benefit through the elimination of diseased animals but it is doubtless true as has been pointed out in the public press that dairy products from

the state will command a better market when the fact becomes universally known.

Humans, of course, have brought this about, but how characteristic it is of missionaries to think of saving others while neglecting themselves. It would be unfair to say that boards of health had been negligent. These and tuberculosis societies have done a most commendable work among us. What we would like to point out is the indifference the same farmer shows toward his human while testing his bovine herd. The two should go hand in hand and physicians will render an acceptable service by stressing the need. County Tuberculosis Associations have distributed solutions free to physicians for making the Mantoux test and it should become a serious habit for each to urge its application in every family whose health has been entrusted to his care. The Swedish Hospital in Minneapolis graduated the first class of so certified nurses a few years ago; St. Mary's of Minneapolis has adopted the plan and presumably others are following.

The next question to be decided is whether a primary tuberculous infection is an asset or a liability. This has been the subject of much lively discussion throughout the country. Studies at Lymanhurst would indicate that a Gohn tubercle is definitely not desirable.

A. E. H.

A GOOD SYNOPSIS OF ECONOMIC SUGGESTIONS

One of the clear minds of the executive staff of the American Medical Association is that of Dr. F. C. Warnshuis, until recently secretary of the Michigan State Medical Association and now secretary of the California State Medical Association. Dr. Warnshuis has also been for several years Speaker of the House of Delegates of the A. M. A. and Associate Editor of the American Medical Association Bulletin. In all these various capacities he has had ample opportunity to examine and evaluate the many plans which have been put forth to unravel the difficulties of medical care for the people of restricted or deficient means. He has summarized the more outstanding of these plans together with his own personal ideas about them in an address which he delivered at the second general meeting of the Seventy-Sixth Annual Session of the American Dental Association in St. Paul, on August 7, 1934, and published in the Journal of the American Dental Association for December, 1934. It is a notable and very informative document which contains the gist of all important phases of the question under the title of "Pending Problems and Trends in Medical and Dental Economics." It is something which all of us can read with profit and it will give a clear picture to those who have not been following these matters very closely.

Of course he offers no panacea. No one can, with honesty. What we need most at the present time is the clearest possible understanding of existing conditions and this article should be very useful along that line. He deplores the fact that we are not yet fully organized, only about 75 per cent of legalized medical practitioners being within the pale of organization and perhaps a smaller proportion of dentists. He emphasizes the fact that mere society membership means little; it is the men who are alive to the needs of the hour and willing to do some work that are the real backbone of any organization and he estimates that not more than 45 per cent of the membership of medical societies are in this class and even fewer of the dental members. He thinks that we should have "a united profession sustaining an acceptable dynamic membership" and in this we believe he is quite right. Medicine is such an individualistic vocation that it has been among the last and the least enthusiastic about the benefits of cohesive action. But results are beginning to show and perhaps those who have been holding back because they must have something definite and concrete in return for their annual dues will soon realize that very substantial gains have been made through concerted effort and that more can be achieved if the support is the unanimous strength of the profession.

G. C.

SOCIETIES

Partial Program of the Sioux Valley Medical Association Meeting to Be Held at the Cataract Hotel, Sioux Falls, S. D., January 22-23, 1935

The participants and their subjects are:

Dr. J. C. Ohlmacher, Vermillion, S. D.
Director of the State Health Laboratory.
Subject:
"Cancer Pathology with Special Reference to the Responsibility of the Medical Profession in the Control of This Disease Process." Illustrated.

Dr. E. W. Rowe, Lincoln, Nebr.
Subject:
"Principles of Irradiation."

Dr. Wallace H. Cole, St. Paul.
Subject:
"The Principles of the Modern Treatment of Fractures and their Development and Historical Survey."

Dr. Louis A. Buie, Rochester.
Mayo Clinic.
Subject:
"Proctologic Problems of the Surgeon & the General Practitioner."

Dr. Herman L. Kretschmer, Chicago.
Dept. of Urology,
University of Chicago.
Subject:
"Present Day Views In the Treatment of Prostatic Obstruction." Personal experience in over 700 cases. Illustrated.
"Urological Problems In Children." Illustrated.

Dr. Ralph Hess Kunstadter, Chicago.
Attending Pediatrician, Michael Reese Hospital.
Subject:
"Diagnosis & Treatment of Endocrine Disorders of Children." Illustrated.

Dr. Frederick A. Willius, Rochester.
Mayo Clinic.
Subject:
"Factors Concerned In Diagnosis of Heart Disease."

Dr. Oliver S. Ormsby, Chicago, Ill.
Dermatologist, Rush Medical College.
Subject:
"Some Mycotic Infections of the Skin and Contact Dermatitis." Lantern slide discussion.

On the evening of January 22, following an informal dinner and entertainment at the Cataract Hotel, for the doctors and their wives, a union meeting of physicians and laymen at the Sioux Falls Coliseum will be addressed by James W. Fifield, D.D., noted lecturer and world traveler, on the self chosen subject "Hats Off to the Doctors."

A fine program of music will be given by the High School Orchestra.

The Women's Auxiliary of the 7th District Medical Society will entertain the doctors' wives attending the Sioux Valley meeting.

Mead Johnson & Co. will present moving picture films, Surgical and Obstetrical, of marked interest to the profession. A practical demonstrator will exhibit the films.

The Sioux Valley Ophthalmological and Larngological Society will have its sessions at this time, program as yet unannounced.

NEWS ITEMS

Dr. J. R. Kuth has been named the new chief of staff of St. Mary's Hospital, at Duluth.

Dr. Louis B. Wilson, of the Mayo Foundation, Rochester, was recently married to Miss Grace McCormick, of Philadelphia, Pa.

Dr. B. W. Bunker, a graduate of the University of Minnesota Medical School, has opened offices for general practice at Rock Creek, Minn.

Williston, N. D. physicians were hosts to the hospital nurses of that city last month, at its annual dinner. Dr. I. S. AbPlanalp presided as toastmaster.

The mileage allowance under the South Dakota relief administration's medical aid program was reduced on January 1, from twenty to ten cents a mile.

Drs. Martin Norland and T. H. Sweetser, Minneapolis, were among those elected to active membership at the recent meeting of the Western Surgical Association.

Miss Annie Goodrich, Dean Emeritus of Yale University School of Nursing, was the guest of honor of the Minneapolis Nurses Association at their Christmas party last month.

Miss Louva A. Cady, aged 62 years, who had been superintendent of the Vocational Hospital, Minneapolis, for the past 20 years, died this month, the result of a heart attack.

Erection of the new hospital at Yankton, S. D. will be delayed for several months as new plans will have to be drawn to keep within the amount of the appropriation for its construction.

Dr. Emil Goetsch, Brooklyn, N. Y., is on the program as a guest speaker, at the annual meeting of the Minneapolis Surgical Society to be held February 7, at the Minneapolis Club.

Dr. Alfred Owre, dean of the College of Denistry at the University of Minnesota for 22 years, and world famed as an educator, died at his home, this month, in New York City.

Dr. C. A. Lester, a former Winona, Minn., physician, died last month at a hospital in Maywood, Ill. Dr. Lester had been in poor health for several years, and retired from active practice.

The Western Montana Medical Society, at its annual meeting held at Missoula, elected Dr. W. N. McPhail, president; Dr. E. S. Murphy, vice-president, and Dr. A. R. Kinter, secretary.

The Range Medical Society held its annual meeting at Ely, Minn., last month and elected Dr. O. W. Parker, Ely, president; Dr. G. A. Miners, Deer River, vice-president, and Dr. A. Sinamark, Hibbing, secretary.

The American College of Surgeons has approved the medical service of the Great Northern Railway Company, with the minimum standard of medical service in industry of the American College of Surgeons.

The Southwestern Surgical Congress will hold its sixth annual meeting at Jacksonville, Fla., March 11-12-13. Full information can be obtained by addressing, Dr. B. T. Beasley, secretary, 1019 Doctors Bldg., Atlanta Ga.

Dr. Joseph A. Hedding, aged 51 years, a member of the medical staff of St. Barnabas Hospital, Minneapolis, died at his home last month. Born in Minneapolis, Dr. Hedding had practiced medicine in the city for the past 28 years.

The Southwest District Medical Society held its annual meeting at New England, N. D. and elected Dr. W. H. Gilsdorf, New England, president; Dr. W. C. Bradley, Beach, vice-president, and Dr. A. E. Spear, Dickinson, secretary.

A total of $11,910,880 has been requested by the Minnesota Board of Control as its budget needs for the next two-year period, beginning July 1, for improvement and maintenance of state hospitals and asylums and penal and correctional institutions.

At the December meeting of the members of the Seventh District Medical Society, held at Sioux Falls, officers elected for the year were: Dr. W. E. Donahoe, Sioux Falls, president; Dr. F. C. DeVall, Garretson, vice-president, and Dr. F. L. Hummer, Lead, secretary.

The Stearns-Benton County, Minnesota Medical Society's new officers for the present year are: Dr. H. W. Goehrs, St. Cloud, president; Dr. A. A. Meyer, Melrose, vice-president; Dr. F. J. Schats, St. Cloud, treasurer, and Dr. J. N. Lipert, St. Cloud, secretary.

Dr. O. H. Holmstrom, of Warren, Minn., recently returned from Boston, Mass., after having attended the post-graduate course in surgery, given by the Harvard Medical School, at Massachusetts General Hospital. On the return trip he visited in the East and Cleveland, visiting the various hospitals.

Dr. T. H. Lewis, Fargo, was elected president of the Cass County Medical Association at its annual meeting at Fargo. Dr. Carl E. Elofson was elected vice-president and Dr. E. M. Watson, secretary-treasurer. All officers were elected by unanimous vote. Following the election there was a program of scientific talks and discussions.

Dr. B. F. Smith, superintendent of the Willmar State asylum since 1927, was appointed to take charge of the Rochester State Hospital by the Minnesota Board of Control, effective January 1. Dr. Smith succeeds Dr. Arthur F. Kilbourne, who died recently. Dr. Kilbourne was superintendent of the hospital for 45 years and gained nation-wide prominence.

The H. Longstreet Taylor Foundation, which operates Pokegama Sanatorium at Pokegama, Minnesota, has opened offices at 702 Medical Arts Building, Minneapolis. Doctor F. F. Callanan, Medical Director, will spend Monday afternoon, Tuesday forenoon, Thursday afternoon, and Friday forenoon in Minneapolis, each week, for consultation work in tuberculosis.

Arthur L. Abbett, of Duluth, Minn., a member of the class of 1935 in the medical school at the University of Minnesota, departed for San Jose, California, on December 31, 1934. Mr. Abbett will complete his internship at the Santa Clara County Hospital in San Jose. He is also a graduate of the College of Pharmacy at the University, and is a member of Chi Phi and Alpha Kappa Kappa fraternities on the campus.

Dr. Logan Clendening, Kansas City, Mo., professor of clinical medicine at the University of Kansas, and author of *The Care & Feeding of Adults* and *The Human Body, Methods of Treatment, etc.*, and well-known conductor of a syndicated health column, will deliver the second annual Clarence Martin Jackson lecture in Northrop Memorial Auditorium at the University of Minnesota on February 20, at 8:15 p. m. The Clarence Martin Jackson Lectureship, sponsored by the Phi Beta Pi medical fraternity (Minnesota chapter), was named in honor of Dr. Jackson, head of the department of anatomy in the University of Minnesota Medical School. Last year, the guest speaker was Dr. Walter L. Bierring, of Des Moines, president of the American Medical Association. Unusual interest is attached to the address by Dr. Clendening, inasmuch as he is known to be a polished speaker, of forceful and independent thought. The title of his address is announced as The Human Side of Medicine. The lecture will be open to both the laity and the profession.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS ON NOVEMBER 3 AND DECEMBER 8, 1934

BY EXAMINATION

(October)

Name	School of Graduation	Address
Annis, Jere Wright	U. of Minn., M.B., 1934	4325 Dupont Ave. S., Minneapolis, Minn.
Barton, John Chaplin	U. of Minn., M.B., 1933, M.D., 1934	2640 Harriet Ave., Minneapolis, Minn.
Benson, Clifton Emanuel	U. of Minn., M.B., 1932, M.D., 1933	303 E. 20th St., New York, N. Y.
Betlach, Charles John	U. of Minn., M.B., 1933, M.D., 1934	Mayo Clinic, Rochester, Minn.
Blomberg, William Russell	U. of Minn., M.B., 1933, M.D., 1934	2310 Como Ave. W., St. Paul, Minn.
Blum, Benjamin B.	U. of Wis., M.D., 1933	Mayo Clinic, Rochester, Minn.
Boody, George, Jr.	U. of Minn., M.B., 1933, M.D., 1934	100 N. Lexington Parkway, St. Paul, Minn.
Brink, James Russell	Rush Med. Col., M.D., 1933	Mayo Clinic, Rochester, Minn.
Cardle, George Ernest	U. of Minn., M.B., 1932, M.D., 1933	Medical Center, Jersey City, N. J.
Carlson, Leslie August	McGill U., M.D., 1933	Mayo Clinic, Rochester, Minn.
Carroll, William Hugh	U. of Minn., M.B., 1932, M.D., 1933	Oak Terrace, Minn.
Chier, Reuben Donald	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.
Childrey, Edgar, Jr.	Med. Col. of Va., M.D., 1933	Mayo Clinic, Rochester, Minn.
Clark, Henry Bannister, Jr.	U. of Minn., M.B., 1933, M.D., 1934	2177 Carroll Ave., St. Paul, Minn.
Collins, Dean Albert	U. of Minn., M.B. and M.D., 1934	323 Millard Hall, U. of Minn., Minneapolis, Minn.
Day, Lois Amelia	U. of Chicago, M.D., 1932	Mayo Clinic, Rochester, Minn.
Doman, Victor William	Marquette U., M.D., 1934	St. Luke's Hospital, St. Paul, Minn.
Ellis, Ralph Victor	U. of Minn., M.D., 1934	155 Malcolm Ave. S. E., Minneapolis, Minn.
Erickson, Cyrus Conrad	U. of Minn., M.B., 1932, M.D., 1933	University Hospital, Minneapolis, Minn.
Frogner, Lester Sanford	U. of Minn., M.B., 1933, M.D., 1934	136 Melbourne Ave. S. E., Minneapolis, Minn.
Garling, Luvern C.	U. of Iowa, M.D., 1933	Mayo Clinic, Rochester, Minn.
Goss, Henry Clay	Rush Med. Col., M.D., 1934	Litchfield, Minn.
Herrell, Wallace Edgar	U. of Va., M.D., 1933	Mayo Clinic, Rochester, Minn.
Hubly, James Worden	U. of Mich., M.D., 1931	Mayo Clinic, Rochester, Minn.
Jensen, Alvin M.	U. of Minn., M.B., 1934	Swedish Hospital, Minneapolis, Minn.
Jerome, Bourne	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.
Kelsey, Kenneth Lawrence	U. of Minn., M.B., 1933, M.D., 1934	1544 Asbury Ave., St. Paul, Minn.
Knepper, Paul Albert	Northwestern, M.B., 1932, M.D., 1933	Mayo Clinic, Rochester, Minn.
Kvale, Walter Frederick	Northwestern, M.B., 1933, M.D., 1934	Mayo Clinic, Rochester, Minn.
LaBree, Robert Henry	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.
Lenton, Herbert P.	U. of Minn., M.B., 1932, M.D., 1933	Mayo Clinic, Rochester, Minn.
Leser, Ralph Ulrich	Indiana U., M.D., 1930	Mayo Clinic, Rochester, Minn.
Levi, Sam	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.
Maitland, Edwin Thayer	U. of Minn., M.B., 1934, M.D., 1934	Jackson, Minn.
McDonald, John Roland	U. of Manitoba, M.D., 1933	Mayo Clinic, Rochester, Minn.
McGowan, John Malcolm	Dalhousie U., M.D., 1933	Mayo Clinic, Rochester, Minn.
Monson, Einer Millard	U. of Minn., M.B., 1934	Milwaukee County Hospital, Wauwatosa, Wis.
Nealy, Donald Eugene	U. of Minn., M.B., 1933	St. Mary's Hospital, Duluth, Minn.
Olds, George Hodgson	U. of Minn., M.B., 1934	St. Luke's Hospital, Duluth, Minn.
Penn, George Erving	U. of Minn., M.B., 1932, M.D., 1933	307 Lafayette St., Mankato, Minn.
Peterson, Donald Laing	U. of Minn., M.B., 1932, M.D., 1933	Mayo Clinic, Rochester, Minn.
Peterson, Harold Oscar	U. of Minn., M.B., 1933	Glen Lake Sanatorium, Oak Terrace, Minn.
Potek, David	U. of Minn., M.B., 1933	St. Mary's Hospital, Duluth, Minn.
Saunders, Thomas Sewell, Jr.	U. of Maryland, M.D., 1932	Mayo Clinic, Rochester, Minn.
Scherling, Sidney Saul	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.

Name	School of Graduation	Address
Schulhof, Maurice George	Northwestern, M.B., 1931, M.D., 1932.	Mayo Clinic, Rochester, Minn.
Sharp, David Vincent	U. of Minn., M.B., 1931, M.D., 1932...	3851 Beard Ave. S., Minneapolis, Minn.
Smith, Lloyd Arthur	U. of Minn., M.B., 1933, M.D., 1934...	Co. 2772, C. C. C., Watford City, N. D.
Stebbins, Theodore Leslie	U. of Minn., M.B., 1933, M.D., 1934...	Eitel Hospital, Minneapolis, Minn.
Steenrod, Emerson Joseph	U. of Pittsburgh, M.D., 1933.....	Mayo Clinic, Rochester, Minn.
Stolpestad, Herbert Lauritz	U. of Minn., M.B. and M.D., 1934....	852 Mound St., St. Paul, Minn.
Stuart, Hugh Alexander	McGill U., M.D., 1928.....	Mayo Clinic, Rochester, Minn.
Teem, Martin Van Buren	Emory U., M.D., 1932.....	Mayo Clinic, Rochester, Minn.
Troup, Wilson James	U. of Nebr., M.D., 1929.....	Mayo Clinic, Rochester, Minn.
Tyler, Stanley Hobart	U. of Minn., M.B., 1934.....	University Hospital, Minneapolis, Minn.
Ulferts, Ulfert Ray	U. of Minn., M.B., 1932, M.D., 1933...	Co. 750, C. C. C., Mena, Ark.
Urenn, Bernard Marlin	U. of Minn., M.B., 1934.....	Minneapolis General Hospital, Minneapolis, Minn.
Weisberg, Maurice	U. of Minn., M.B., 1934.....	Deaconess Hospital, Minneapolis, Minn.
Welch, Charles Stuart	Tufts U., M.D., 1932.....	Mayo Clinic, Rochester, Minn.
Zide, Harry Arthur	U. of Cal., M.D., 1934.....	Mayo Clinic, Rochester, Minn.

BY RECIPROCITY

Johnson, Donald Warner	Rush Med. Col., M.D., 1923.....	630 Medical Arts Bldg., Seattle, Wash.

NATIONAL BOARD CREDENTIALS

Stalker, Leonard Kay	Syracuse U., M.D., 1933.....	Mayo Clinic, Rochester, Minn.

NATIONAL BOARD CREDENTIALS
December 8, 1934

Greenberger, Edward David	University and Bellevue Hospital Med. Col., M.D., 1932.....	Mankato Clinic, Mankato, Minn.

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The JOURNAL LANCET

Minneapolis, Minnesota
February 1, 1935

Vol. LV, No. 3
New Series

The Cautery Treatment of Cervicitis; An Historical Summary*

Guy L. Hunner, M.D.†
Baltimore, Md.

ACCORDING to the English gynecologist, James Henry Bennet,[1] Celsus used the actual cautery for treating ulcers of the prolapsed uterus. About the middle of the last century Jobert de Lamballe, the talented Paris surgeon, used the actual cautery in treating the ulcerated cervix as well as in cases of severe inflammatory hypertrophy. Bennet says that Jobert always used the conical ivory speculum to protect the vaginal walls from the radiated heat, but this "is not, however, indispensable. One or two olive-shaped cauteries, heated to whiteness, may then be extinguished on the part of the cervix which has to be cauterized. An eschar, more or less deep, is thus formed, as by cauterization with *potassa fusa*. It is necessary that the cautery should be brought to a white heat, as otherwise it adheres to the tissues on being withdrawn. But little pain is experienced by the patient, either at the time or subsequently, the eschar falling off from the sixth to the tenth day, according to the depth of the cauterization. When the actual cautery is used to remove inflammatory hypertrophy, two or more cauterizations may be necessary to restore the neck of the uterus to its natural size."

It appears from Bennet's discussion of the relative merits of the actual cautery and the Vienna paste (which Bennet preferred) that both methods involved the entire circumference of the cervical canal, and unless used with discretion, serious stenosis resulted. It is probable that the preponderance of bad results in the hands of the profession at large, finally led to the practical abandonment of these methods so successfully practised by a few discreet surgeons as far back as 1840.

Mathieu and Schauffler[2] present a chart depicting the incidence of complete cervical occlusion reported in the years 1780 to 1927. The curve of cases due to obstetrical trauma is highest around 1820 and again around 1900, but in general has remained fairly constant throughout the 147 years. The curve representing occlusions due to treatment with caustics rose abruptly and steadily from 1840 to 1880, since which time it has steadily declined. The curve for operation rose from 1860 to 1880 and since then has declined, presumably because of improved methods of repair and better surgical technique.

Unaware of the excellent earlier work of Jobert and of Bennet, the author[3] in 1906 first presented the method of cauterization by deep radial incisions.

The pathological and bacteriological work of Winter,[4] Menge and Krönig,[5] Cullen,[6] and others, had demonstrated that bacteria or their pathological *sequelae* are seldom found in the uterine cavity, and that leucorrhea is usually a symptom of disease in the lower genital tract, the cervix being the most frequent source of the abnormal discharge.

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The advantages of the method of using the actual cautery in deep radial strokes were predicated on the theory that the deep cervical glands, with the surrounding inflammatory areas, would thus be destroyed, and that enough healthy stroma would be left between the cautery strokes to insure against future stenosis and dystocia at labor.

As a by-product in the use of this method to cure leucorrhea this report records two cases of sterility in women, who became pregnant after the use of the cautery. Further observations in this important field were largely responsible for the publication in 1913 of a second paper[7] on the use of the cautery in cervicitis. In this paper I summarized the results in 241 cases treated with the cautery, and discussed 15 cases, who later had conceived, apparently as a result of the cautery treatment. In 1924 Wharton[8] analyzed from our records 526 cases of sterility and in 73 of these women, who had been sterile two years or longer, cervical infection and leucorrhea were the only demonstrable causes of the sterility. Three of these were subjected to cervical operation without results on the sterility. Twenty-one, with mild pathological conditions, were treated with the time-honored local applications, tampons, and douches, with later conceptions in 5 (24 per cent), and 49 patients with grosser lesions were treated only with the radial cautery method, conception following in 13 (26 per cent).

In his discussion of my second paper the late Henry O. Marcy of Boston, recalled a discussion in which he participated at the Seventh International Medical Congress held in 1881 in London. Those who may think that the importance of cervicitis as a disease entity has been recognized only since the beginning of this century, will do well to refer to the *Transactions* of this Congress, published 55 years ago, and enjoy the forensics of the giants of an earlier generation. In this discussion Goodell of Philadelphia pleads for operation on the cervix as a preventative of cancer, "for in my experience cancer of the cervix very rarely indeed occurs in women who have never borne children. But I have had repeated ocular evidence that it started from the constantly raw and irritated surface of a cervical rent."

Modes of Cauterization—Dickinson,[9] in 1921 in an excellent plea for the use of the cautery in suitable cases, proposes the use of the fine cautery tips of the laryngologist to do away with "the clumsy Paquelin hospital operation of Hunner." Other writers since Dickinson have apparently missed the following paragraph in my first paper: "One great advantage of this method is that it may be applied in office practice without giving anesthesia of any kind." I used the Paquelin for several years because of the large volume of white heat which could be engendered in the cautery blade, insuring the prompt sinking of the blade to any depth that seemed indicated in the individual case. With the later improvement in thermo-cauteries, and because of the difficulty of keeping the Paquelin in first-class condition, I have long since displaced the latter, but still use a thermo-cautery blade of sufficient weight to cut promptly to any desired depth. A review of the literature seems to indicate that those using the lighter blades obtain as good results as those who favor the heavier, and it is difficult to account for this apparent fact when we consider the anatomical structure of the cervix. While we know that the cautery heat destroys tissue and areas of infection at some depth beyond the actual contact of the blade, yet it would seem that the very fine blade would tend to cause only superficial sloughs and a covering in of the deeper areas of infection by scar-tissue.

The cautery recently devised by Baker and Miles[10] would seem to be a happy compromise between the light and heavy forms.

Cashman[11] advocates the total destruction of all the cervical glands by heavy thermocautery at one operation, the patient being hospitalized and under complete narcosis. In five years experience he had severe-enough post-operative hemorrhage to require packing in four cases, and all his cases have to be watched for several weeks, and require repeated post-operative dilatation until the cervical canal is completely covered by epithelium in order to prevent stenotic closure by cohesion of the granulating surfaces. In a later paper Cashman[12] discusses the value of this method as a preparation of the cervix in many cases needing hysterectomy for non-malignant conditions and in which sub-total hysterectomy promises a much safer method than total hysterectomy.

Kuhn[13] recommends complete coning-out of the cervix with the cautery at dull heat in cases in which malignancy is suspected, and when the cervix is badly eroded, and when epitheliomata of the cervix, both in the early and in the fairly well advanced stages, are present. "This operation should not be done before the climacteric unless supravaginal hysterectomy is to follow, because the cicatrization invariably closes the uterine canal."

Collins[14] recommends the use of hot bulbs in sizes from 14 to 30 Fr., introduced in quick succession as high as they will pass easily. "In over a hundred cases, extending over a period of three years, I have not seen a bad result from the use of the bulbs, such as scar formation." While this method will undoubtedly improve the leucorrhea, it must cause a universal superficial slough, and the absence of bad results is probably due to the fact that the deeper glands persist and quickly furnish new epithelium to cover the canal.

Roblee[15] discusses the advantages, in different types of structural changes in the cervix, of using the actual thermocautery, electrocoagulation, and bipolar fulguration. Diathermy has been used by some with varying degrees of success. Curtis[16] and others have advocated the use of radium, but the method seems to have been given up because of the many dangers to other structures, the great care and skill involved in its successful use, and the comparatively long time that the radium burn causes a leucorrhea until complete healing supervenes.

Conservative Modes of Treatment Other Than by Cautery—We need not discuss at length the older methods of treating cervicitis in general use before the recent general adoption of the radial cautery method. I cannot agree with many of our best gynecologists, who dismiss these older methods as being worse than useless. I have seen too many good results follow the use of depleting tampons and hot antiseptic douches (the heat of more value than the antiseptic), to believe that they will ever be entirely discarded. If they do not give prompt relief, one can then adopt the more radical methods of radial cauterization or an operation.

Davis[17] and others are using the cautery within three or four weeks after delivery. This appeals to me as being ill-advised. I have had an occasional patient insist on a repair operation within a few weeks after delivery on the grounds of a profuse leucorrhea, a feeling of prolapse and general malaise, and because she has been informed that she is lacerated. Examination reveals conditions that look as though operation would eventually be necessary; but after explaining to the patient that it is usually not wise to interfere actively while the tissues are inflamed and edematous, she co-operates with whatever local treatment is advised, and in such measures as seem necessary for improving the general health, and after a few weeks or months it becomes evident that operation is not necessary. The early post-partum use of the cautery is advised on the grounds of prophylaxis, but it is usually a safe rule to defer our more radical measures until nature has shown what she can do, assisted, perhaps, by our simpler methods that can do no harm.

Kennedy[18] reviews the use of ethyl alcohol in various nerve lesions, and concludes that the good results follow either the chemical section of the nerve, or the obliteration of a perineural focus of bacteria, or both. These observations, together with experience in the use of alcohol injections about ulcers and abscesses, led him to an attempt to sterilize the infected cervix by deep interstitial injections into each cervical lip of 2 cc. of a 25 per cent solution of ethyl alcohol in distilled water. His apparent success with this method stimulated Moench[19] to the use of the anilin dyes by the same methods. After Churchman's demonstration that gentian violet is more bacteriostatic for the gram-positive, and neutral acriflavine for the gram-negative organisms, and that a mixture of these solutions is as diffusible and as non-toxic as alcohol, she mixed equal quantities of these dyes each in a 1:1000 solution and used varying dilutions of this mixture for the interstitial injection into the cervix. In recent personal communications I find that both these injection methods have been abandoned by their sponsors. Dr. Kennedy writes that after following his method for about two years it was discontinued because of its painful administration, and because the beneficial effects lasted only from four to six months. Dr. Moench writes that her method was tried for about two years and then abandoned for essentially the same reasons.

Operative Measures—The recent literature seems to indicate that the Sturmdorf[20] is by far the most popular procedure when operation is indicated.

Koster[21] by repeated experiments clearly shows the impossibility of being certain that we remove all the infected glands and the surrounding infection of the interstitial tissues by any form of cervical operation except by complete amputation of the entire cervix. "In undoubted cases of chronic endocervicitis, after removing a cone-shaped wedge containing the endocervical mucosa after the technique of Sturmdorf, a piece of tissue from the new canal wall was excised, before relining with the mobilized vaginal cuff. This, upon section and staining, showed glandular elements and surrounding inflammatory reaction similar to the tissue removed in the cone-shaped wedge." I think everyone with wide experience in any form of cervical repair has seen the occasional case which later needs the cautery

drainage of a few remaining glands which appear at the surface and cause a certain degree of leucorrhea.

I have never performed the Sturmdorf operation, believing that I could more nearly control the complete eradication of the glands by excision of a wedge-shaped section from each cervical lip. As a house-officer around 1900 to 1902, I observed that with the circular amputation of Hegar[22] we frequently had difficulty in apposing the vaginal and cervical mucosa, and post-operative study of the cervices thus treated often showed that the stitches cut through, allowing retraction of the mucosa edges, and that, instead of *per primam* healing, granulation supervened with resulting heavy scar formation to interfere with any future labor. Post-operative hemorrhage was another serious complication in this method. I, therefore, adopted what appears to be a more formidable operation of first splitting each side of the cervix with an incision up into the broad ligament areas as deeply as the individual case seems to demand. These lateral incisions are joined by semicircular incisions anteriorly and posteriorly following the cervicovaginal reflection. A wedge-shaped piece is then excised from each cervical lip extending up toward the internal os region as far as the inflammatory conditions seem to extend. After removal of the wedge, the vaginal mucosa is easily apposed to the cervical mucosa by interrupted sutures of No. 2 chromic catgut on cutting needles, each suture dipping into the cervical musculature to a depth sufficient to obliterate potential dead space and control the bleeding. The remaining lateral incisions in the vaginal vault are closed with No. 2 plain catgut sutures on round needles, care being taken to pick up the broad ligament tissues so as to avoid dead spaces. These bites into the broad ligament tissues are superficial in order to avoid injuring blood vessels, and in the high excisions special care is taken to avoid the ureters. The extreme lateral suture in each vaginal vault is given a double whip, and the outer loop is taken beyond the incision edges, for these lateral angles are the most frequent sites of postoperative bleeding.

I supposed that this modification of the Hegar circular amputation was original, but further search of the literature shows that it is virtually the operation of Simon described by Marckwald.[23] Marckwald reviews the etiological factors concerned in the various forms of cervical stenoses, angulations, inflammatory changes, and hypertrophies, and the methods in use in his time for their correction. Of the more conservative measures he discusses the use of intrauterine pessaries, laminaria bougies, cauterization both with caustics and the actual cautery, depletion of blood by leeches, scarification, and multiple incision. Of the operative measures he discusses those of Sim,[24] Hegar, Schroeder,[25] Taylor,[26] and others, and describes fully the kegelmantelförmigen operation of Simon, which is essentially the operation I have always found the most satisfactory. Marckwald gives to Marion Sims the credit for the "fruitful idea of the plastic covering of the uterine stump, a conception which is the origin of many later methods of vaginal amputation."

Further Recent Important Contributions—In the early days of this work we were primarily concerned with the relief of the patient's chief symptom, leucorrhea. Fortunately, the use of the cautery in office practice resulted in the desired relief in the vast majority of cases, and hospitalization and operation for the uncomplicated case of cervicitis has become a rare procedure. With increasing experience one soon learns to apply the cautery superficially or deeply in the tissues, and to carry each stroke of the blade high toward the internal os, or confine it to the region of the external os, according to the structural changes found in the individual case.

The literature of the last 20 years has been replete with excellent articles bearing on the cervical problem. Many of these contributions are chiefly of clinical interest, but some of them add materially to our knowledge of cervicitis and its relations to other more serious diseases, thus opening many avenues for future experimental and clinical research. The limits of space admit of only a brief reference to some of these more recent important contributions.

Incidence of Cervicitis—Miller[27] states that "endocervicitis is a definite clinical entity of such common incidence and such grave potentialities that more than one writer does not hesitate to affirm that it causes more loss of time and more inconvenience to those affected than any other gynecologic condition." Fulkerson[28] reports on 6,483 women examined in the gynecology department of the Cornell University Medical School between November 1, 1921, and March 15, 1926. A diagnosis of cervicitis or endocervicitis was made in 2,150 of them, a percentage of 33.16. Admitting that the patients seen in a gynecological diagnostic clinic show an incidence greatly in excess of that among women in general, these figures are of value in proving the disease the most commonly met with by the gynecologist.

Only 1,039 of these patients were treated for the cervicitis.

Masson and Parsons[29] report on 226,900 women examined for all conditions at the Mayo Clinic from 1919 to 1926 inclusive. Cystic cervicitis was sufficiently marked to be diagnosed by the general history in only 2,368 cases, 1.05 per cent. "In considering the female population as a whole, it is probable that these statistics represent fairly accurately the incidence of cystic cervicitis. The patients in the large gynecologic clinics are there because of a pelvic complaint; these represent a small proportion of the general population."

Anatomy and Pathology of the Cervix—Pemberton and Smith,[30] Gann[31] and others have published valuable studies on the anatomy and pathology of the cervix, but the most concise and satisfactory presentation I have seen is that of G. L. Moench.[32] Moench follows the embryological development of the Mullerian ducts from the time they are lined throughout with the same type of columnar epithelium until at birth when we find the four different segments of the genital tract lined with their respective types of epithelium. He describes the battle in early life between the columnar epithelium of the cervix and the squamous epithelium of the vagina for the supremacy of eminent domain at the external os. He agrees with R. Meyer that when the red columnar epithelium of the cervix persists in holding the area of the portio vaginalis, the condition should be designated as pseudoerosion rather than as congenital erosion. "These congenital pseudoerosions usually heal later in life, that is, become covered by squamous epithelium." He mentions the work of Courrier and others who found that injection of ovarian extract causes proliferation of the squamous-cell epithelium of the vagina in the new-born, and thinks it possible that the beginning ovarian function at puberty is a factor in the healing of congenital pseudoerosion. Moench also warns against confusing an ectropion or eversion of the external os region due to inflammatory hyperemia, especially in acute conditions, with true erosions where there is actual loss of surface structures. His explanation of the development of Nabothian cysts is the one agreed upon by most authors, and he mentions the inclusion cysts due to traumatically displaced and buried islands of columnar or squamous-cell epithelium.

Moench suggests that cervicitis is a better term than "endocervicitis" because the inflammatory process extends out to the squamous epithelium of the portio. In discussing acute cervicitis he thinks the presence of pointed condylomata on the cervix, while rare, is pathognomonic of gonorrhea. I have seen one case of this type where gonorrhea as an etiological factor seemed definitely excluded and in which the disappearance of the condylomata was coincident with the clearing up of a trichomonas vaginalis infection.

Symptoms of Cervicitis—Leucorrhea is such a frequent and annoying symptom that many articles dealing primarily with cervicitis bear the title of Leucorrhea, the symptom, rather than Cervicitis, the disease. We must not lose sight of the fact that leucorrhea is by no means pathognomonic of a cervicitis. One of the most complete expositions of the meaning of leucorrhea is that by Bland,[33] who emphasizes that trichomonas vaginalis is one of the most frequent causes of leucorrhea. While first described by Donne, in 1836, it has been only in very recent years that this disease, so easily diagnosed, has been generally recognized. Bland justly says that it is "the prevailing, if not pernicious, habit of regarding most cases (of leucorrhea) as of endocervical origin and treating them as such."

Other symptoms sometimes definitely traced back to an origin in cervical disease and relieved by treatment of the cervicitis, are menstrual disturbances, sterility, a feeling of pelvic pressure, bearing down or "falling of the womb," backache, headache, gastro-intestinal symptoms, and dyspareunia. Some authors add to this list symptoms referable to the urinary tract. One of the most valuable lessons we as gynecologists have learned in the past 20 years is that the urinary tract must be kept in mind constantly in seeking a cause for local or general symptoms which at first seem of obscure origin. The author[34] has shown that most of the symptoms above listed are common complaints in the patient suffering primarily from the effects of ureteral stricture; and that if cervical or other forms of gynecological treatment yield disappointing results, the urinary tract should not be overlooked. It is still more valuable to the patient whose symptoms happen to derive from the urinary tract if we discover this fact before beginning gynecological treatment.

Cancer of the Cervix—We have seen that as far back as 1881 Goodell advocated operative removal of cervical disease because of his clinical observation that cancer seems to arise in the constantly raw and irritated surface of a cervical rent.

TeLinde[35] has presented a judicial analysis of the problem concerning the so-called "precancerous" lesions of the cervix. He concludes that

hundreds of uteri are sacrificed annually which might be saved if pathologists generally were more familiar with the finer nonmalignant changes in the cervix as well as the earliest histologic signs of malignancy.

Pemberton and Smith[30] agree with the general view that "the important etiological factor (in cancer) is not the laceration but rather the consequent inflammation and chronic irritation." "Since it is impossible to determine who will have the disease, all such patients should be treated in order to cure or remove the chronically inflamed tissue." They review 5,926 cases of cervical treatment in a period of 52 years at the Free Hospital for Women in Boston. There were 3,814 trachelorrhaphies, 740 amputations, and 1,408 treated by cautery, and only five were known to have developed cancer of the cervix, and these were in the trachelorrhaphy group. Of 669 patients with carcinoma of the cervix none had ever been treated with cauterization. Huggins[36] reports on 2,985 cases of chronic cervicitis treated by the radial cautery method without a known case of later cancer development. Some authors, notably Masson and Parsons, seem to minimize the influence of cervicitis on the development of cancer. "There is no clinical evidence that cystic cervicitis in itself is a precancerous condition. In studying the pathologic reports of carcinoma of the cervix (number not given) it was found that in only two cases had carcinoma been reported in cystic cervix."

Bacteriology of Cervicitis—The greatest recent advance in our knowledge of cervicitis and especially in our appreciation of its possible influence on the general economy has followed more accurate bacteriological studies.

Curtis[37] has reviewed the early work in this field which was chiefly concerned with problems of puerperal infection. These early studies resulted in the discovery of Döderlein's bacillus as the normal inhabitant of the vagina, and of a considerable flora of organisms both aërobic and anaërobic under conditions of infection from the exterior. They also demonstrated that the normal uterine cavity is sterile and that when infected, the uterus, by virtue of its vertical position, its rhythmical contractions, and its monthly flushings, has great powers of self-sterilization. Consequently the common use of the term "chronic endometritis" was not justified by the findings. Curtis, by making use of the newer methods of tissue grinding and of various methods and media for the separation of the different types of microorganisms, arrived at conclusions which gave a new impetus to the study of the bacteriology of the genital tract. His work largely corroborated that previously done, but it marked a long step forward in verification of the generally accepted opinion that the cervix is the chief seat of chronic leucorrheal discharge. He found that the character of the discharge varies with the predominant organisms present, and that some of these organisms harbored in the deep tissues of the cervix are capable of exerting a profound influence on the general health.

Polak[38] states, "Sooner or later the deeper structures are always involved, producing cervical metritis." Leopold's description of the lymphatic distribution in the uterus suggests the far-reaching pathology which may result from a chronic cervical infection."

Matthews[39] observes, "In the musculature nearest the cervical mucosa may be found small inflammatory foci or even small multiple abscess formations. The clinical course is slow and insidious and shows little or no tendency towards a spontaneous cure."

Sturmdorf speaks of the cervix as the "tonsil" of the uterus—"this pathogenic parallel finds its applicability when chronic endocervicitis is recognized as a primary infectious focus and its systemic symptoms as toxic manifestations."

Laura Moench,[19] apparently stimulated by Curtis' discovery of both aërobic and anaërobic staphylococci and streptococci as fairly common invaders of the cervix, made a notable contribution in her attempt to further the conception of the cervix as a focus of infection; by verifying Curtis' bacteriological studies, and supplementing this by an intensive study of the pathologic conditions produced by the cervical flora on animal inoculation.

From a series of 82 cases with leucorrhea, 38 strains of organisms from the cervix were used for animal inoculation. "Two series of cases were chosen, one in which evidence was lacking of secondary disease, and a second series referred from the sections on orthopedic surgery and ophthalmology, consisting of conditions recognized as associated with a focus, or foci, of infection, but in which all foci other than the cervix had been eliminated." Some of Moench's conclusions were as follows: "Bacteriologic and animal experiments indicate the special rôle played by the streptococcus, with regard to the pathogenicity, and the relative unimportance of the more saphrophytic flora. Evidence is presented to show the affinity of cervical streptococci for joint tissues. Marked percentage increase in joint localization, in a series of selected cases of arthritis,

suggests relationship with Rosenow's elective localization theory in focal infection."

A search of the literature indicates that most workers still attribute the cervical infection as always originating from the lower genital tract. In 1911 I[40] first advanced the theory that a chronic non-purulent urethritis or a chronic ureteritis might have an origin from micro-organisms or their toxins derived from infected tonsils. In that paper I also recorded the clinical observation that certain chronic inflammations of the lower genital tract might have a similar origin. In 1924 I[41] elaborated on this theory as follows: "A fact which I have often stressed and which has not yet been generally recognized by gynecologists is that focal infections may result in inflammatory conditions about the external genitalia which one cannot differentiate clinically from a chronic gonorrhea. The patient may present a cervicitis, vaginitis, vulvitis, ulcerations about the para-urethral crypts, and brilliant red points about the hymen which make the clinical picture identical with that of a gonorrhea. The most suggestive and most striking circumstances under which we see these conditions leading us to scout a gonorrheal origin are in children and in spinsters, where the social conditions and clinical investigations practically exclude gonorrhea as a factor. To have these signs and symptoms disappear after proper care of the focal infection furnishes the final argument."

Rosenow[42] observes, "The idea that endocervicitis might be the result of a hematogenous infection took definite form through a striking result in the case of a little girl 3 years of age, who developed a purulent vaginal discharge during an attack of influenza in the 1918 epidemic. Smears and cultures of the vaginal pus yielded large numbers of the green-producing streptococcus so commonly found in that epidemic. Intratracheal injection of the primary and secondary cultures, besides causing hemorrhagic edema of the lungs, produced lesions with purulent exudate proved to be due to the streptococcus in the uterus and vagina in each of 3 female guinea pigs injected."

It is more than likely that many cases of vulvitis, vaginitis, and cervicitis in children, considered as of gonorrheal origin, belong rather in this category of genital tract infections secondary to some distant focus, or having a hematogenous origin during one of the acute infectious fevers.

Gynecologists deal with the occasional case of acute infection of the parametrium or of a tube or ovary in which there is lacking a history of the usual etiological factors such as gonorrhea, childbirth, abortion, trauma, recent instrumental examination or operation, or tuberculosis. We have learned from experience to approach such lesions with the utmost care, extraperitoneally when possible, and to provide wide drainage if they are intraperitoneal, for they are likely to harbor virulent streptococci or staphylococci.

In recent literature the infected cervix is charged with responsibility for such lesions. No doubt this is true in certain instances, but some of them probably derive from more distant foci of infection, especially those located about the head, and in some the pelvic infection of this type arises during or immediately following one of the acute infectious fevers.

We see, therefore, that in adopting the cervix as one of the important foci for the distribution of infection to other parts of the body, we must not lose sight of the fact that the cervical infection is not always derived from below, but, like the arthritis or other inflammatory lesion, may have its origin from one of the foci with which we have been more familiar.

Langstrath[43] reviews the results in 50 cases operated on at the New Jersey State Hospital, through the courtesy of Dr. Henry A. Cotton, director. The author believes this "records the first series operated upon for removal of infective foci in the cervix, with the deliberate purpose in view of relieving some mental or nervous condition or manifestation." Most of the women in this series of cases reached the gynecological service after every other focus of infection that could be found had been removed and vaccines had been used. The following mental results were obtained: 18 women were improved after removal of foci in teeth, tonsils, etc., but none were cured. After removal of the focus in the cervix 21 cases were improved; 15 of these had shown no improvement from removal of other foci; the other 6 had shown some improvement from the former work. After removal of their infected cervical glands 17 patients are reported by the hospital to have recovered mentally; 11 of these showed their first improvement after removal of foci in the teeth, tonsils, etc.; the other 6 showed no improvement until the cervix operation was done; then they recovered.

"Just as in arthritis, the best results in nervous and mental diseases are obtained when the foci are removed early in the course of the disease: little benefit can be expected when fibrous changes have taken place or nerve tissue has been destroyed."

Summary

It is probable that chronic cervicitis is the most

frequent disease treated by the gynecologist. Its chief local symptom, leucorrhea (sometimes with resultant sterility), its referred symptoms due to inflammatory engorgement and pressure, its probable influence on the development of cancer, and its probable capacity for causing far-flung systemic derangements through distribution of toxins and actual infections, all combine to give cervicitis a high rank as a serious disease.

The treatment of cervicitis aims at the destruction of the deep racemose glands with their surrounding infection. Most authors agree that the thermocautery used in radial strokes is the best method for obtaining the desired results. One school favors a drastic use of this method to accomplish the results in one sitting. This means hospitalization and anesthesia for the patient, and a number of subsequent dilatations to insure an open cervix. Most workers agree that the office treatment without anesthesia is preferable. Such treatments are applied once a month, preferably about one week after the menstrual period. From one to four treatments usually suffice, and the patient is not hindered from carrying on with her usual activities.

Cauterization should never be done until a diagnosis of cervicitis is established. Trichomonas vaginalis should be excluded as the cause of the leucorrhea. In gonorrheal infections one should get repeated negative stains, and four to six months should elapse before using the cautery. If there is any reason to suspect malignancy, biopsy sections should be examined from more than one location if indicated.

Under certain circumstances operation is the preferable treatment. The Emmet trachelorrhaphy is useful in the occasional case of single deep laceration, especially if done soon after labor before the infection has involved the entire cervix. We are usually dealing with the chronic case, in which the inflammation involves most of the cervical glands, and our effort is to remove all the glands and the surrounding inflammatory stroma and yet leave enough of the cervical musculature to support a pregnancy. We must also aim at *per primam* healing, in order to avoid scar-tissue stricture and dystocia at labor. Either the Sturmdorf or the Simon operation seem to approximate these ideals.

If the chronic cervicitis is accompanied by a much relaxed pelvic floor and descensus, or by retroversion and subinvolution of the uterus, and particularly if there are signs of inflammation about the internal genitalia, operation is usually preferred to cautery treatment. The nature of the operation is governed by the patient's age, the number of children living, the patient's desire for more children, and by the condition of the general health.

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SEPTIC ABORTION*

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OUT of the backwash of our modern social life and economic conditions of the past few years has come an increasing number of criminal abortions. The less fortunate of these women, who have gone to the criminal abortionist, infected, return to their regular family doctor for treatment, with symptoms of uterine bleeding, chills and elevation of temperature. It becomes our responsibility, although at times unpleasant task to care for these critically ill patients.

The treatment of febrile abortion as advocated by leading gynecologists and obstetricians throughout the country has crystalized into one of extreme conservatism. Daily contact with my medical colleagues convinces me that the principles of conservative treatment of septic abortion is neither generally accepted nor practiced. May this analysis of case histories serve as another plea for the conservative management of febrile abortions.

This report is based on a study of 681 case histories of abortions admitted to the Grady Memorial Hospital, the City and County Hospital of Atlanta, during the past five years from January 1, 1929, to January 1, 1934. Of these 681 cases of abortions, 566 were classified as spontaneous, with no information obtained as to attempted interference with the pregnancy; while 215 cases were either self-induced or were interrupted by an abortionist.

Knowing how reticent patients are in giving such information, there are probably many other induced abortions among those classified as spontaneous. Of the 215 induced abortions, 71 were stated to have been performed by physicians or midwives, while 144 were self-induced. In the self-induced group, the catheter was the instrument most frequently used. Crochet needles, pencils, rods, slippery elm sticks, paper openers, syringe nozzles and other pointed instruments were introduced into the uterus in an effort to induce abortion. The drugs most generally taken were quinine, calomel and castor oil. Ergot and turpentine were drugs also resorted to by some patients.

The ages of these patients of induced abortions ranged from 15 to 45 years of age. The age decade presents a striking decrease in the percentage of criminal abortions as the age of the patients increased; the greater number occuring in the second and third decades. By far the largest number of criminal abortions in this series occurred in married women, the majority of whom had borne one or more children. The duration of pregnancy at the time the abortion occurred varied from one week to twenty-four weeks, with an average of a little more than eight weeks. Abdominal pains, chills, fever and bleeding were the symptoms most frequently recorded on admission to the hospital. Although a temperature of 100.4° F. is generally accepted as evidence of infection, the standard in this study has been raised to a temperature of 101° F. or higher on two successive days.

With this standard as evidence of sepsis there were 185 patients among the 681 cases of abortion who had a temperature of 101° F. or higher during their stay in the hospital. Of these 185 septic cases, 96 patients were treated conservatively, whereas 89 patients had some form of operation as part of their treatment. In the majority of the latter, the operation was described as dilatation of the cervix with removal of products of conception with sponge forceps, or dull curette. These two groups, the one operative and the other non-operative gives an excellent opportunity of comparing the two lines of treatment. There was one death in the non-operative group, a patient who was admitted to the hospital and died within twenty-four hours after admission, and two deaths in the operative group. Far more striking than the difference in mortality is a comparison of the morbidity in the two groups. One has only to look over the temperature charts of many of the patients operated upon to be convinced that in many instances cases of mild infection were changed into a more serious septic state as a result of the operation. The highest temperatures

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and the longest duration of temperature are found in the operative group. Of the patients who had fever prolonged two weeks or longer, 20.5 per cent occurred in those operated upon, as compared with 6.2 per cent in the non-operative group. One out of every five patients in the operative group had prolonged fever, while in the conservatively treated cases only one out of sixteen showed continued elevation of temperature. This may be expressed another way, by the number of hospital days represented by the two groups.

The 89 operative cases spent 866 days in the hospital (average of 9 days per patient), whereas 96 non-operative cases were in the hospital 730 days, or an average of 7½ days per patient. In other words, the average hospital stay was prolonged two days per patient in the operative group. These figures show that the patients operated upon had a more stormy and unduly prolonged convalescence compared with the non-operative post abortal course.

The pathology of septic abortion is a wound infection at the placentalsite with organisms invading the uterine wall and lymphatics. Any intrauterine manipulation can only serve to spread infection beyond the leucocytic barriers which nature has built up around the site of infection. Removal of infected placental debris from the uterine cavity with a curette, destroys these protecting barriers and opens up fresh channels for spread of infection through ruptured venous and arterial sinuses. An anaesthetic given incident to the operation, causing nausea and vomiting, adds to the dehydration of an already sick patient.

Treatment

Based on a study of these hospital records and my own personal experience, I am convinced that the treatment of febrile abortions should be one of extreme conservatism. Septic abortion is potentially a serious condition. Every case of febrile abortion should be treated in a hospital. An initial vaginal examination is gently made under sterile precautions. Where foetal or placental debris are found protruding from the cervical canal, these are removed with the glove finger or sponge forceps. No attempt should be made to dilate the cervix or invade the uterine cavity. Repeated vaginal examinations are dangerous and should be avoided.

Complete rest in bed in Fowler's position, except in cases of active bleeding; ice cap to lower abdomen; codein, morphine or other sedatives for pain as needed is ordered. A complete blood examination is made on admission. A high caloric, low residue diet is ordered. Fluids are forced by mouth supplemented by hypodermoclysis where indicated to give the patient a fluid intake of 3,000 cc. per day. Blood transfusion of 200 cc. to 300 cc. whole blood given repeatedly in patients with marked anemia and grave sepsis. The use of sera and vaccines are without value. Intravenous chemo-therapy has no value and may be even dangerous. Foreign protein injections in the form of milk, Aolin, Omnadin, etc., fall into a different class. These are of some value and should be used. A course of fluid extract of ergot, one-half drachm every four hours, for six to eight doses is given, supplemented by 0.5 cc. doses pituitrin to control uterine bleeding and hasten uterine contractions. Under such a regime invasion of the uterine cavity to control bleeding will be a rare necessity. Uterine hemorrhage is the excuse so often offered for operative interference. A vaginal pack, aided by pituitrin will control excessive bleeding far better than any other method, and with greater safety to the patient.

If operative treatment becomes necessary for control of uterine bleeding, one should wait, if possible, until the patient's temperature has been normal for a period of six or seven days.

Conclusions

1. This report is based on a study of 681 cases of abortions.

2. Criminal and self-induced abortions occurred in 30.3 per cent of the cases.

3. The majority of induced abortions occurred in married women who had borne one or more children.

4. There were 185 patients who showed evidence of infection on admission to the hospital; 96 of these were treated conservatively, and 89 had some form of operation as part of their treatment.

5. The mortality of the operative group was 2.08 per cent; the mortality of the non-operative group was 1.12 per cent.

6. The conservatively treated patients had fewer complications and left the hospital two days per patient sooner than the operative group.

7. This report serves as a plea for the conservative treatment of all cases of febrile abortions.

THE TREATMENT OF SALPINGITIS*

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THE treatment of salpingitis during the past 25 years has gradually, but none the less surely, become more and more conservative. Previous to 1905 operative removal of both acutely and chronically inflamed tubes was generally practiced. Then, during the next decade, in 1909, Simpson read his paper before the American Gynecological Society on the value of delay in operation, and numerous other advocates of expectant treatment began to report favorable results. During the intervening years the weight of evidence on the side of conservatism has become steadily more convincing until today there are few gynecologists or surgeons who do not use palliative measures in the treatment of salpingitis before resorting to surgery for relief of symptoms.

On the other hand one can find in the recent literature quite radical views by a few men of wide surgical experience, who still maintain there is no more risk in operating upon the acute pus tube than upon the appendix, and that the patient's loss of time in hospital convalescence is greatly shortened by such measures. We find we cannot subscribe to any part of such a view for we believe that even with a skilled surgeon the mortality rate from peritonitis will be amazingly high, and that the man who follows such a policy will be performing a needless operation in at least 75 per cent of his cases.

In Aldridge's recent careful analysis of salpingitis cases, there was a mortality rate of 11 per cent in 99 acute cases which happened to come to operation. Curtis, who has added so much to our knowledge of the bacteriology of pelvic infection, states, "If patients who have gonorrhoeal salpingitis have proper conservative treatment only 15 per cent will ultimately need operation."

The frequency with which salpingitis is met in the average physician's practice is well known so that its proper management should concern not only the gynecologist but the surgeon and general practitioner as well. It has been said that about 20 per cent of all adult female patients have pelvic lesions, and again that approximately 20 per cent of all pelvic cases have some type of acute or chronic salpingitis.

Of 1,000 consecutive admissions to the gynecological dispensary of the Roosevelt Hospital in 1930, (175) 17 per cent had salpingitis and of these (75) 40 per cent were sufficiently acute to require complete rest in bed either at home or in the hospital; while (100) 60 per cent were sufficiently subacute or chronic that ambulatory treatment could be carried out.

On the other hand of 800 gynecological hospital admissions in 1930 (161) 20 per cent had salpingitis, of which (94) 60 per cent were acute and (67) 40 per cent could be classed as chronic. This classification was based upon temperature reaction, leucocyte count, pelvic examination, and sedimentation test. Of these criteria we firmly believe that the sedimentation of the red cells gives the most accurate clinical information obtainable concerning the acuteness or chronicity of these cases.

In the acute (94) group (67) 71 per cent became quiescent with conservative treatment alone and were discharged symptom free, while (6) seven per cent became quiescent but had persistant symptoms and adnexal pathology sufficient to require removal of one or both tubes. The remaining (21) 22 per cent, having had large tuboovarian or pelvic abscesses, were drained through colpotomy incision, and of these 66 per cent subsided and have required no further surgery, 14 per cent have required a subsequent second colpotomy but have then cleared up, while 20 per cent (even after the colpotomy) have had sufficient remaining chronic adnexal pathology to require complete removal of tubes, ovaries and uterus when the inflammatory process had become quiescent as indicated by the sedimentation test.

In the chronic (67) group (29) 43 per cent after a short period of hospital care were free of palpable pathology and symptoms and were discharged without operative procedure; (30) 45 per cent were subjected to conservative surgery which removed one or both tubes, and (8) 12 per cent had sufficient ovarian damage to require removal of both uterus and adnexae. In this group complete hysterectomy was done three times as frequently as supravaginal extirpation, chiefly for the purpose of obtaining free pelvic drainage and to remove diseased cervices.

Conservative Treatment Procedure

All salpingitis cases are examined on admission by the resident and attending gynecologists and notes are made as to the extent of induration, position of the uterus and condition of the cervix. Smears are taken and the positive cases are isolated as to linen and toilet facilities. With the aid of the temperature chart, leucocyte count, and sedimentation test an endeavor is made to decide at once whether a case should have the test of

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conservative treatment or whether operative procedure is indicated without further delay.

The acute and subacute group is composed of those cases with temperature over 100, or leucocytes over 10,000, or red cell sedimentation of more than 30 mm. an hour. These patients are put at absolute rest in bed with sufficient sedative to keep them comfortable. Ice bags are placed on the lower abdomen, not with any thought of curative effect, but for relief of pain, which purpose they serve admirably, greatly increasing the patient's comfort and thereby reducing the amount of sedatives necessary. Douches are not given while the inflammatory process is at all active and likewise tampons are forbidden. Too great stress cannot be laid upon the admonition to examine these patients as infrequently as possible, and always with extreme care and gentleness. We have all seen subsiding adnexal disease flare up after pelvic examination, injudicious use of tampons or too much activity on the part of the patient, particularly near the menstrual period. If the temperature, pulse and general condition are satisfactory pelvic examination once a week should suffice. Such precautions are doubly important in those mild cases with only tubal redness and edema, for this is the one group where meticulous care as to absolute rest may result in healing without obstruction of the fimbriae and a good chance for future pregnancy.

Mild cases are allowed out of bed about one week after the temperature has become normal, while in those with more palpable adnexal pathology, walking is not permitted until there has been fairly complete absorption of the process. Here again one must not depend too closely upon the temperature or leucocyte count or many patients will be allowed up much too soon. We feel the sedimentation test gives a much more accurate indication as to the extent to which the inflammatory process has become quiescent. Some of our mild cases have left the hospital in 10 days, while those with more involvement remain much longer, even up to six or eight weeks, but the average hospital stay has been approximately two and one-half weeks.

After leaving the hospital all cases are seen regularly at recall and those needing tampon treatment are referred to the out-patient department. They are cautioned against too much activity at the next few menstrual periods.

We entirely approve of protein milk therapy but at the present time are only using it in the acute cases with rather massive induration. We feel that it is definitely beneficial in hastening absorption and relieving pain.

The results above described in the conservative treatment of acute salpingitis have been obtained by such simple procedure as adequate and sufficiently maintained rest and inactivity on the part of the patient. Where the use of the Elliott machine or diathermy are available no doubt cures may be effected in even a larger percentage of cases without surgery and the period of incapacity may be greatly shortened. However, it is the purpose of this paper to stress what can be accomplished by simple methods by anyone treating acute salpingitis and without the use of any special or costly apparatus.

Surgical Treatment in the Acute Group

If a pelvic abscess is present or develops it is drained by colpotomy incision through the culdesac and large tubo-ovarian abscesses are frequently opened in the same manner. We endeavor to make a large opening which will accommodate three or four soft rubber cigarette drains (made from Penrose tubing) and sutures are used to control the bleeding from the cut edges. Gauze is frequently packed between the drains and the cut edge of the colpotomy opening to prevent too early closure and to help stop bleeding. These drains are left in place from five to ten days, depending upon the size of the cavity to be drained and the postoperative reaction. We believe that the large opening and comparatively long time the drains are left in place obviates the painful manual dilatation of the opening sometimes necessary should it close too quickly. We have to do a second colpotomy less frequently since we have been following this procedure.

In this acute and subacute group where persistance of symptoms and pathology make surgical removal desirable, such procedure is delayed until the sedimentation time approaches normal. By strict adherence to this policy we have found that we seldom open an abdomen in the "too acute" stage; that more conservative surgery may be practiced; that dissection of adhesions is easier and much less mutilating to the surrounding structures; that abdominal drainage is not necessary; that wound infection is reduced to a minimum; that post-operative distension is less common and peritonitis and sepsis seldom follow. Likewise even in the more extensive cases it is amazing to find with what ease large indurated tubo-ovarian masses may be removed and complete hysterectomy done with the minimum of postoperative reaction. Such cases are drained through the vagina only.

Surgical Treatment in the Chronic Group

In the chronic group we prefer to practice the least radical surgery that will, at the same time,

protect the patient against future disability. Here such factors as age, number of children, and the patient's economic status, as well as the symptoms and extent of pathology must be considered.

If unilateral pain has been a persistant factor the ovary on the offending side is sacrified together with the tube. If any portion of either adnexa is removed we feel that some type of hysteropexy should always be done to prevent the possibility of future displacement.

If it is particularly desirable that the chance for future pregnancy be maintained and the induration within the tube wall has subsided sufficiently to make an attempt at reconstruction possible, this type of conservative surgery is now practiced much more frequently than formerly since the work and method of Sovak has shown us that patency may be obtained in a very high percentage of cases. If the fimbriated end of the tube is closed it is opened and reconstructed by the sleeve method described by Sovak. If the cornual end is blocked, the occluded portion is excised, a new opening is made into the uterine cavity by coning out the cornu with a Sovak punch and the patent proximal end of the tube is implanted through this punched out tunnel. An endeavor to help maintain patency during the first few weeks is begun by repeated tubal insufflation first instituted, when the patient's condition permits, as soon as possible after the first 48 hours. As one begins developing the technique in such a series of cases patency will probably result in from 50 per cent to 70 per cent but as one becomes better acquainted with the procedure patent tubes may be obtained in as high as 90 per cent. It must be emphasized that this reconstruction technique must be practiced only in tubes where all acute inflammation has completely subsided, such as the small, pliable occluded tube or the hydrosalpinx.

If it is necessary to completely remove both tubes a chance for pregnancy can still be obtained by implanting the cut surface of the outer end of the ovary over the opening of a punched out tunnel in the cornu of the uterus similar to that described above under tubal implantation. This method first described by Estes has recently been improved by Sovak.

Summary

In the 808 gynecological admissions to the Roosevelt Hospital in 1930 there were 161 cases of salpingitis, 94 acute and 67 chronic. Of the 161 there were (96) 60 per cent requiring expectant measures only; (17) 10 per cent cleared up after colpotomy only; (36) 22 per cent had removal of one or both tubes, and only (14) eight per cent lost the entire pelvic organs. In the entire operative group we were fortunate enough to have no severe complications from peritonitis or sepsis and no deaths.

We believe that it is unfortunate that in many of our best teaching hospitals limitation of bed capacity prevents the admission and study of many of the milder cases of acute salpingitis; so that the average young doctor upon entering practice knows comparatively little about the proper medical treatment of this disease which will confront him in approximately 20 per cent of his adult female patients.

There is no group of patients where careful conservatism can do so much good, or where careless indifference can spread so much harm. It would not be far wrong to say that, were hospitalization and competent nursing of all salpingitis possible, that the incidence of gynecological surgery would be halved.

A PLEA FOR MORE DETAILED STUDY AND RECORDING OF ORIGINAL AND FOLLOW-UP SPECIMENS OF OVARIAN CYSTS*

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MINNEAPOLIS

FAILURE to study pathological tissue or record such study, and failure to conserve normal tissue, are the outstanding errors of the profession in its handling of ovarian cysts.

The lack of detailed pathology in the record of a first operation renders the information secured in a subsequent operation on the same patient, relatively valueless as regards the establishment of a rational mode of treatment of certain types of ovarian cysts.

Particularly true is this in the case of proliferating cysts of the ovary. Do certain types tend to become papillomatous? Does the papillary cyst have a marked tendency to bilaterallity? Is the papillary cyst essentially a pre-cancerous entity? Does a cyst-adenocarcinoma of an ovary indicate pan-hysterectomy or more conservative treatment?

The facts constituting the answer may be revealed to us only through those unfortunate individuals undergoing subsequent operations, or autopsy. But with the piece representing the original findings missing, the puzzle will remain impossible of completion.

*Prepared especially for THE JOURNAL-LANCET.

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The proper study of a removed specimen involves (1) painstaken scrutiny of the fresh, gross tissue, while the abdomen is still open. This is preferably done by both surgeon and pathologist, when possible. When possible, too, the pathologist should study a frozen section of any suspicious area before the abdomen is closed. (2) More minute and gross study should be made at leisure, and a detailed record made on the hospital chart. (3) Surgeon and pathologist should collaborate in the establishment of a diagnosis to be placed in the record. (4) The gross specimen as well as the microscopic, should be preserved against the day when this patient may return with further ovarian pathology—to the same or other hospital. And finally, should the patient again be operated upon or come to autopsy with ovarian or related pathology, this should be equally carefully studied, and compared to the findings of the previous operation.

Frequently, the secondary or hind-sight information so secured leads to further study of the original specimen, when preserved, with, very often, most illuminating and, also, alas, most embarrassing results.

There follow a few examples illustrating the above points. Because of the paucity of material available for such study, no conclusion must be drawn from these cases except the fact already emphasized, that such study points the way to clearer interpretation of findings and, therefore, to a more rational method of handling these types of ovarian pathology.

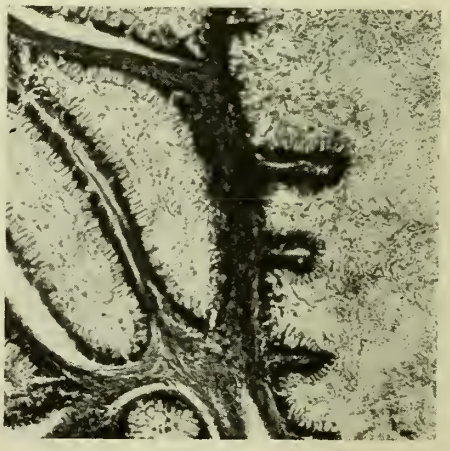
1. (10) At original operation left ovarian cyst removed. Gross and microscopic examination made and no malignancy found. Diagnosis: "Benign cyst-adenoma." Patient returned in six months with recurrence of cyst-adenocarcinoma in the same side. This, plus *normal* opposite ovary, removed. A closer examination of the original cyst which had been preserved, showed papillomatous formation in a single loculation. Sections from this area showed cyst-adenocarcinoma. Patient well two years after second operation.



1. (10-A)



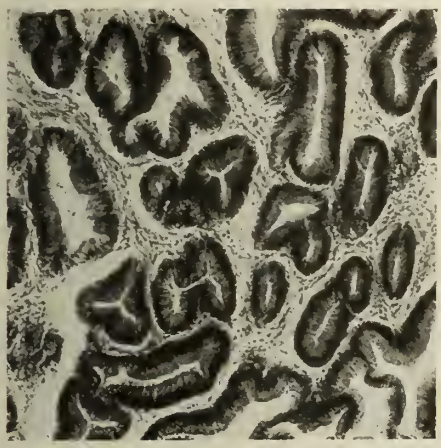
1. (10-B)



2. (7)

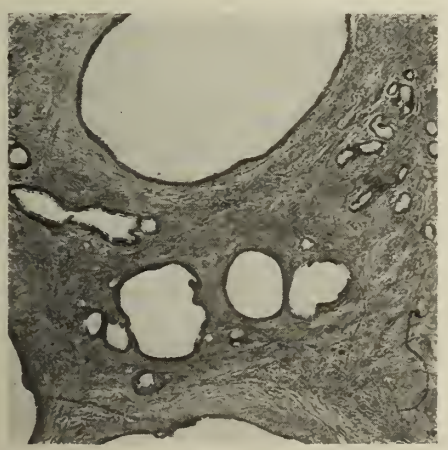
2. (7) At original operation ovarian cyst removed. Gross and microscopic, benign. Diagnosis: Pseudomucinous cyst-adenoma. Patient died in about two years, autopsy showing generalized carcinomatosis (ovarian). Secondary examina-

tion, both gross and microscopic, of original specimen revealed no malignancy. The remaining ovary was *normal* at autopsy. Here one must question the thoroughness of the examination of the fresh (original) specimen.



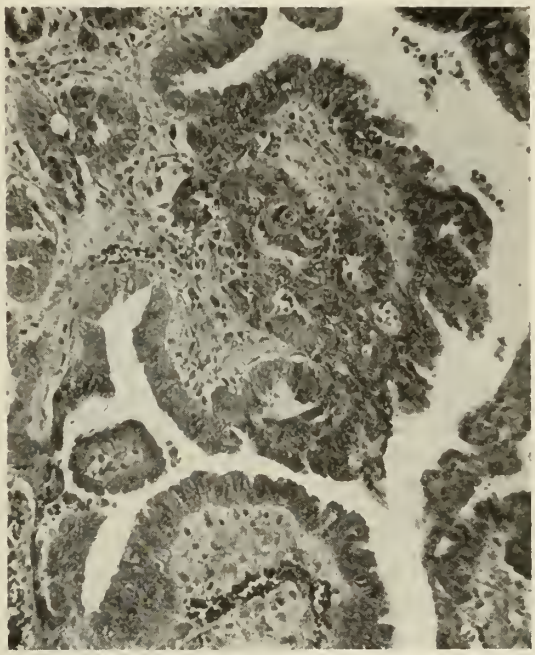
3. (9)

3. (9) Pseudomucinous cyst-adenoma, single ovariectomy; closer examination (after the abdomen was closed) revealed a very questionable borderline picture as regards malignancy, but patient is well after eighteen months.

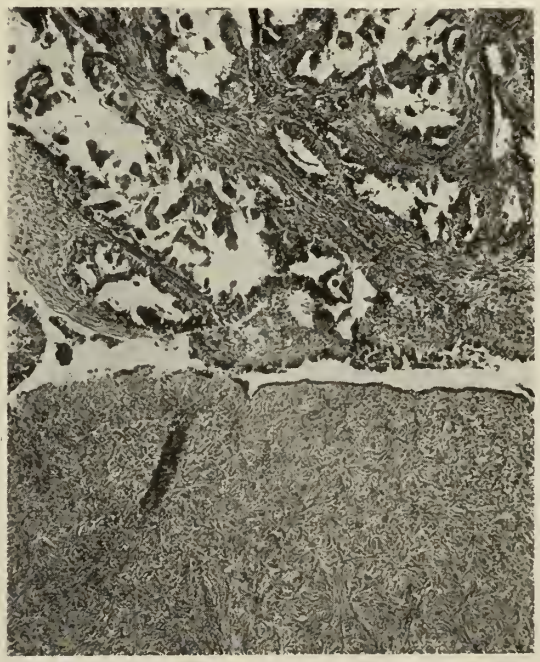


4. (8)

4. (8) Multilocular pseudomucinous cyst in process of early development. Found on routine examination of a resected small "cystic ovary" (hydrops folliculi).

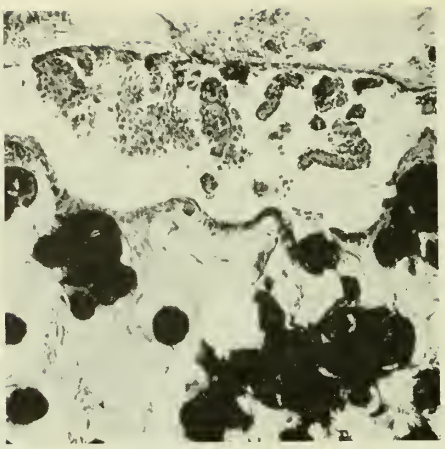


5. (1-A)



5. (1-B)

5. (1) Operation showed definitely in one ovary a papillary serous cyst-adenocarcinoma. A small implantation on surface of the other (and otherwise *normal*) ovary, showed serous cyst-adenocarcinoma.



6.

6. Four years ago operated for proliferating cyst-adenoma. Specimens not preserved. At (exploratory) operation four years later, general abdominal carcinosis found. Piece removed diagnosed as "calcified nodules." Persistent search revealed accompanying picture of glandular structure surrounded by fibrous tissue, i.e., fibrous tissue strangulation of metastases from ovary.

(This material is taken from the records of the Department of Obstetrics and Gynecology, University of Minnesota, through the kind and highly efficient services of Dr. R. W. Koucky of the Department of Pathology.)

THE ROLE OF THE FREE BLOOD IN RUPTURED ECTOPIC PREGNANCY*

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MINNEAPOLIS

SHALL we leave the unclotted free blood in the abdominal cavity which we find at operation for ruptured ectopic pregnancy?

This is a matter of debate among different gynecologists. One group of men advocate complete removal of all clots and all free blood on the basis that it is potentially septic and decomposed. Another group urge leaving the blood alone, while others take a middle course, removing the clots but leaving the free blood to be re-absorbed.

In the spring of 1923, the researches of Drs. D. M. Siperstein and J. M. Sansby upon intraperitoneal transfusion of citrated blood in rabbits and later in infants, arounsed my curiosity. I gained permission from Dr. F. L. Adair, then Chief of Staff of Gynecology and Obstetrics at the Minneapolis General Hospital, to use this method with adults upon certain selected cases on our service.

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These men were searching for an easier approach to transfusion of infants than the site of the superior longitudinal sinus.

Animal experimentation, as we all know, does not always conform to results obtained in man. I was curious to know the rate of absorption of the citrated blood by actual observation in man.

Siperstein and Sansby had shown beyond all peradventure of doubt that this method acted as a true transfusion. They injected pigeons' blood into the peritoneal cavity of rabbits and recovered nucleated red blood cells from the circulatory blood.

The theoretical assumption was that the blood so injected found its way into the circulatory system through the lymphatics of the diaphragm, thence into the thoracic duct and then into the subclavian vein.

I remember well the controversy which raged among their colleagues at the time as to whether this acted as a true transfusion. Many years have elapsed since then and their work has been repeated by so many men that this is no longer a subject of debate.

All of us have observed numerous cases of ruptured ectopic pregnancies which do not conform to the classical picture of total collapse, dangerously low blood pressure, extremely low hemoglobin, etc.

Some of the patients are in surprisingly good physical condition, blood pressure practically normal but at operation have considerable free blood in the peritoneal cavity. What is the answer? Presumably, these patients have no acute sudden blow out of the tubal wall with fast arterial hemorrhage and shock.

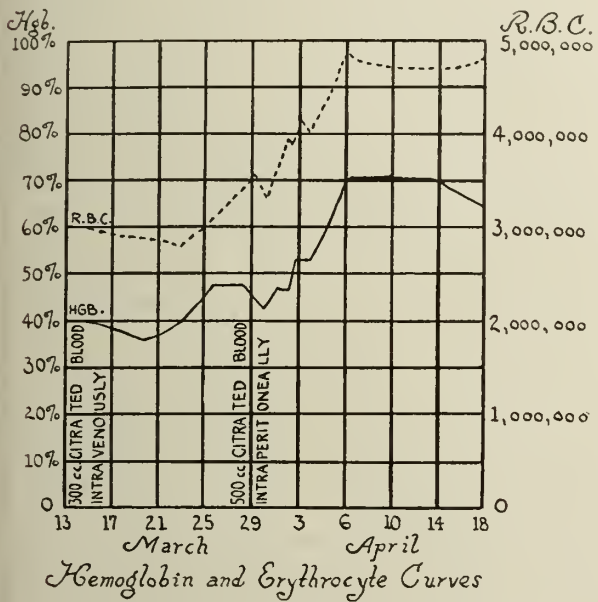
We may assume that the tube gradually weakens, gives way slowly with a more insidious type of bleeding. Due to our knowledge of the rate of absorption of blood in the peritoneal cavity based upon the work of the above mentioned authors and upon actual observations I made upon several cases to be recounted below, we may safely assume that enough blood is reabsorbed into the circulatory system, in such cases, to keep the hemoglobin and blood pressure up and thus fail to give us the classical picture of collapse.

During the months of April and May, 1923, I gave intraperitoneal transfusions of citrated blood (500 c.c. in each case) to ten adult women. All of these patients were women with bleeding, uninfected fibromyomata with secondary anemia except one whose diagnosis was fibrosis uteri with cystic endocervicitis.

My first case was that of an obese woman

whose hemoglobin upon admission was 40 per cent. She was given an intravenous transfusion of 300 c.c. of citrated blood and sixteen days later 500 c.c. intraperitoneally. Dr. Siperstein reported this case in detail in the June 16, 1923 issue of J.A.M.A.

The case history and chart showing the action of the intraperitoneal transfusion as a true transfusion is here repeated:



Hemoglobin and Erythrocyte Curves

Case: Fibroid uterus, secondary anemia.

A woman, aged 45, admitted to the service of Dr. F. L. Adair at the Minneapolis General Hospital, complained of a bloody, vaginal discharge and some backache. Physical examination and laboratory evidence showed a fibroid uterus accompanied by a marked secondary anemia. In order to prepare the patient for a later operation, an intravenous transfusion of citrated blood was decided on. Owing to the patient's obesity, it was necessary to expose a vein in the elbow, and, with some difficulty, inject 300 c.c. of blood. There was apparently no change in the blood picture.

Sixteen days later, 500 c.c. of citrated blood was injected intraperitoneally, by means of a trocar. The procedure was apparently harmless. Her condition appeared much improved following the intraperitoneal transfusion, and the change in the blood picture was also satisfactory. (table)

At the operation, two weeks after the intraperitoneal transfusion, a few c.c. of straw colored fluid were found in the posterior cul de sac. There was no evidence of peritonitis and no clots in the abdominal cavity. There were no adhesions. A supravaginal hysterectomy and appendectomy were performed. Recovery was uneventful.

In this article, Dr. Siperstein (a conscientious student of the literature) states:

"As far as we know, this is the first instance in which an intraperitoneal transfusion of citrated blood was given to an adult. Absorption from the peritoneal cavity, increase in blood values and clinical improvement were undoubtedly interdependent. The laparotomy afforded an excellent opportunity to observe directly what had previously been deduced only indirectly, namely, that absorption does take place from the peritoneal cavity of man."

Subsequently, I gave nine other intraperitoneal transfusions of citrated blood on different adults. The hemoglobin and erythrocyte curves behaved similarly to that given in the chart of Case I.

The ten cases here reported were operated upon at varying intervals after the intraperitoneal transfusions as follows: three, two weeks later; four, one week; two, seventy-two hours and one within forty-eight hours.

These patients were operated upon by different visiting gynecologists. In none was there any evidence of peritonitis. In all of them there was a complete absorption of the citrated blood except the patient operated 48 hours after transfusion. In this case 75 c.c. (measured) of citrated blood was recovered. In all of the cases no clots were found, the peritoneum was smooth and glistening, not injected, and there were no adhesions.

What does this teach us about the role of the free blood in ruptured ectopic pregnancy?

There seems little doubt that in many instances a considerable amount of free blood is reabsorbed in the general circulation. Experimental injection of whole blood in rabbits showed little or no absorption in the hands of Siperstein and Sansby. Defibrinated blood injected by many workers shows absorption.

Several men have given auto-transfusions intravenously of the blood recovered at operation when the patient was in extremis and there was no time for other procedures.

In spite of the experimental work which indicates that absorption does take place into the general circulation, the author does not advocate leaving the free unclotted blood in the peritoneal cavity at operation.

The blood left is not defibrinated and the fundamental principles of coagulation of blood indicate that even though a certain amount of the blood left may find its way in the general circulation, a considerable portion will subsequently clot.

This leaves a nidus of potentially infected or decomposable material to be absorbed in the peritoneal cavity.

In suitable cases not moribund and in reasonably good physical condition, he offers the following suggestion:

Have a suction apparatus ready at operation with sufficient amount of citrate solution in the bottle to prevent clotting of from 500 to 750 c.c. of blood. When down to the peritoneum, grasp it with four clamps, elevate it and incise an opening just large enough to admit the nozzle of the suction apparatus. Suction the free blood into the bottle containing the citrate solution, open the peritoneum and immediaely clamp the ruptured tube. One rarely finds it bleeding. Remove all clots and complete the operation.

The suction bottle should be in a water bath or some such device as hot water bottles attached about it to keep the blood at body temperature.

Completely sew up the peritoneum and then with the patient in the Trendelenburg position insert a trocar attached to a rubber tube and funnel and reintroduce the strained, citrated, unclotted blood into the peritoneal cavity. Routine closure is then made.

This procedure saves much valuable blood which would otherwise be lost, gives better operative visibility, transfuses the patient at the time and gives a smoother convalescence.

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VAGINAL DISCHARGE*

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EVERY gynecological history should contain a definite statement as to the presence or absence of any form of discharge other than that of normal menstruation. Though it is true that some form of discharge is one of the complaints that most frequently direct a woman to seek an examination, yet it is surprising how many women will admit that they have had some kind of discharge, varying from an unpleasant increased moisture to a discharge that has soiled their garments or has even required the use of a napkin, for weeks or even months without attempting to find out its cause. Discharge is invariably a sign of some lesion or disturbance, the gravity of which it is our duty to determine by the most painstaking general and local physical examinations and by laboratory studies.

The cause or causes of every discharge, as of all gynecological pathologic conditions, can be found under one or more of the six basic divisions of gynecological causation; infection; injury; pregnancy; tumors, including cysts; congenital and acquired deformities; and constitutional and functional disturbances. To avoid errors of omission, which in our experience are as frequent as errors of commission, we should carefully examine all genital structures for evidence pointing to each and every one of these basic causes and thoroughly check up the general physical condition of the patient.

In every instance where the history, appearance of parts or the character of the discharge leads to the slightest suspicion of infection, smears should be taken of the urethra, Skene's ducts and Bartholin's ducts after careful massage, and direct smears should be taken of the cervix. These smears should always be stained by the Gram method which will not only bring out the gonococcus, if present, but will give one a fairly accurate idea of other cocci and bacilli present. There are few cocci and bacilli that we have not found to be invading organisms and at times apparently the direct causative factors. Ulcerative lesions should be subjected to dark field examination for spirochaetae pallida and should, under suspicion, be examined for the Ducrey bacillus. In all suspicious cases and in all cases where the gonococcus is found, we should never neglect the Wassermann examination, both immediately and six weeks later.

Aside from venereal infection, the two most common infections are due to the trichomonas vaginalis and the oidium albicans or thrush. Thrichomonas infection usually presents a characteristic frothy discharge with punctate red spots over vagina and cervix, and thrush infection usually gives a cottage cheese discharge with generalized or local areas of white deposit as in thrush of the mouth. The presence of trichomonas or thrush infection can be quickly determined by a hanging drop preparation containing a loop of discharge and a loop of normal saline.

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Our treatment of gonorrhoea has gradually narrowed down to the following routine; in the acute stage, rest, preferably rest in bed, alkalinization of the urine, and soothing warm vaginal douches every four hours. As soon as the acute stage has subsided, douches are discontinued and the urethra is treated daily with a five per cent aqueous solution of mercurochrome and the cervix treated with a twenty per cent solution of mercurochrome. To obtain successful results one should exercise great care in cleansing the urethra and cervix before applying the antiseptic. To cleanse the cervix of all mucus, we have found caroid powder to be the most efficient. It is applied on a cotton applicator and wiped away after time is given for digestion and liquification of the mucus. That well recognized antiseptics other than mercurochrome are excellent in treatment, we have proved by extensive trials during the last twenty years. Such antiseptics are: silver nitrate, argyrol, protargol, metaphen, merthiolate and many others. However, it has seemed to us that mercurochrome has given the best results, though we realize that this judgment is open to refutation because of the complicating factors in each case of the unknown virulence of the infecting organism, the resistance and reaction in each patient, and the difference in anatomical structure in regard to drainage. The chief factors in local treatment no matter what antiseptic is used are: thorough cleansing of the parts before medication, frequent application of medicaments, and the establishment at all times of drainage. Before effecting a cure Skene's ducts and cervical glands may have to be destroyed by cautery and Bartholin's glands removed. Cure is determined by all absence of discharge and inflammation and by five negative smears, the last two taken following menstrual periods.

It may be of interest to note that we discontinued the use of diathermy in gonorrhoea after a thorough trial not only because it did not improve our results but because it subjects patients to the danger of extending the infection through the internal os.

It is our opinion that gonorrhoea in the child can be best treated by the mother. The mother is given two blunt nosed medicine droppers and taught how to instill a few drops of twenty per cent argyrol into the urethra and a dropperful into the vagina. She is advised to treat the child every four hours. This is done with the hips of the child raised on a pillow and the child remains in this position for twenty minutes. Smears are taken every month after all signs of discharge and irritation have disappeared. We have had no experience with administration of Theelin before puberty. Excellent results recorded warrant attention.

In all infections, general tonic treatment should not be neglected. The diet should be gone into thoroughly in respect to its balance and its mineral and vitamin content. Special attention should be given to bringing up the iron and calcium content of the blood. Basal metabolic rates should determine necessity for thyroid administration. Plenty of fresh air, sunlight, rest and sleep should be insisted upon. Attention should be given to urinary and bowel activities.

The treatments used for trichomonas vaginitis are legion. We are now using the following method: The vagina is thoroughly scrubbed with tincture of green soap and carefully dried. All parts are then treated with 1-1000 hexaresorcinol and a tampon inserted containing equal parts of glycerine and icthyoldine. A dram of 1-1000 hexaresorcinol is instilled into the bladder and a suppository containing one per cent mercurochrome is inserted into the rectum. The next morning the patient removes the tampon and takes a douch containing one ounce of tincture of green soap to the quart of warm water. This treatment is given every other day until freedom from symptoms and signs obtain. It has seemed to us that the treatment of bladder and rectum has reduced the prevalence of re-infection. The patient should be re-examined immediately after the following menstrual period and treatments repeated if necessary. When re-infection repeatedly obtains, the husband should be examined for trichomonas in urethra and prostate.

Thrush infections usually respond promptly to thorough cleansing and the application of one per cent aqueous gentia violet solution. This treatment is repeated daily until cure is effected.

A word about the cervix as a focus of chronic infection. Do not dismiss a patient until the cervix looks normal. To a certain extent the cervix may be likened to the tonsil as a harborer of chronic infection. Generally, linear cauterization will return the cervix to normal. However, at times nothing short of a conical enucleation of Sturmdorf or a modified Schroeder operation will bring about a cure. In arthritis we have seen joints flare up after repair of the cervix and then have seen the arthritis disappear entirely, apparently as a result of this removal of infected cervical glands.

In our experience, the three most common types of injury that cause resulting discharge are: parturition; the prolonged and unsupervised use of corrective pessaries, especially ill-fitting

pessaries; and the ill-advised and unsupervised use of vaginal douches. No woman in the postpartum period should be dismissed until involution of the uterus in complete, no discharge exists, and no erosions exist on the cervix. Though the most accurate primary repair of the perineum, under the most careful aseptic technic should be routine after every delivery, we do not yet believe that, even under the best aseptic technic, safety warrants the drawing down of every cervix with attempted primary repair except under the compulsion of stopping hemorrhage. Experience teaches that a large share of the small lacerations of the cervix heal unaided, that an even larger number respond to linear cauterization in the puerperium, and, that those few that eventually demand operative repair can be repaired with better results and greater safety secondarily. Conservative obstetrics renders the necessity for secondary repair of the cervix very infrequent. It likewise has rendered the vesico-vaginal and recto-vaginal fistulae of rare occurrences. Relaxation and laceration of the pelvic floor, with cystocele, rectocele and prolapse with subsequent discharge due to friction injury and infection, obviously calls for repair.

Care in properly fitting corrective pessaries, care in their monthly or bimonthly cleansing, and their temporary or permanent removal solves the treatment of discharge from pessaries.

It is difficult to combat the time honored douche. A heralded mark of the fastidious, promoted by sales agents of rubber goods and pharmaceutical supplies, so easy to prescribe and so obvious in its implications of relief, its defenses are well nigh invulnerable. However, if any one will hold any douche solution in the palm of the hand for twenty minutes and mark the results on the tough palmer epithelium, he will be a less enthusiastic advocate of the vaginal douche. It is not comparable to washing the hands because the vagina is not dried after the douche. Douches disturb the normal chemistry and flora of the vagina and macerate the epithelium. We have found their indiscriminate use a frequent cause of discharge. Where possible, direct cleansing of the parts, drying and application of medicaments directly to lesions are superior forms of treatment. For applying heat the Elliot method is far superior to the douche.

A frequent cause of discharge is the so-called congenital central erosion found in many girls and older women. It might be described as a prolapse of the endocervix with a discharge aggravated by the chemical injury of the vaginal secretions and infection. These central erosions usually respond readily to linear cauterization at monthly intervals. In some instances only a Sturmdorf enucleation or a modified Schroeder operation will bring about a cessation of the discharge. When speaking of cauterization we mean cauterization performed in the office with a thin wire nasal cautery, under the anesthetic effect of cocaine, thirty-five per cent applied superficially. In our experience the thin loop nasal cautery offers the following advantages: it causes little, if any, pain because it is thoroughly insulated up to one-half inch from its tip and thus does not cause distress from heating the vault of the vagina; it results in less secondary bleeding; and is less likely to cause wide destruction of tissue with subsequent stenosis of the cervical canal.

Leucorrhoeal discharge not infrequent in pregnancy, due to increased blood supply of the cervix, we prefer to handle by external cleanliness alone if possible and if infection can be excluded. If treatment is indicated we prefer direct cleansing of the vagina and cervix and topical application of medicaments, rather than douches which may cause contractions of the uterus and tend to increase maceration of the vaginal and cervical mucosa.

When we consider the question of discharge from the standpoint of possible tumor origin, especially malignant tumor origin, it is obvious that if we are going to accomplish any marked reduction in cervical cancer mortality we must not only redouble our efforts to convince women that they should report immediately for examination upon the appearance of any discharge other than that of a normal menstrual period, but we must increase our efforts to persuade them to have at least yearly examinations after childbirth and after the age of thirty-five. We know that a malignant tumor may be quite far advanced before it breaks down and causes a discharge. For years nearly every medical meeting has contained one or more papers on the importance of the early diagnosis of cancer of the uterus and yet we have made little if any advance in mortality reduction. The implication in every paper seems to be that too many physicians are careless in their gynecological examinations or temporize too long in definitely finding out the exact nature of any abnormal finding. It is certainly the duty of each and every one of us to correct any laxity in this regard. The detection of change in cervical epithelium is greatly aided by painting the cervix with Lugol's solution. This is also an excellent method of bringing out areas uncovered by

squamous epithelium in directing linear cauterization in ordinary areas of erosion.

We should be most careful in our examination of the cervix in respect to giving heed to minute tumors and suspicious areas of discoloration and leucoplakia. Where any doubt exists as to the nature of an unusual appearance of the cervix an immediate biopsy should be performed. In taking these biopsies great care should be used in removing a section sufficiently extensive to give the pathologist an opportunity of studying changes in the basement membrane on each side of the lesion as well as under the lesion. Leucoplakia of the cervix has been well enough established to be a likely precancerous lesion to warrant amputation of the cervix. Distinct areas of engorged discoloration should be biopsied. Any lesion that bleeds easily and does not respond promptly to treatment should be biopsied no matter how benign its base may appear. Any lump not cystic in character should be biopsied.

The two most common and usually benign tumorous conditions of the cervix that frequently cause profuse leucorrhoeal discharge are: the cervical polyp, and the cystic cervix. The polyp may cause a bloody discharge, especially after intercourse. Discharge due to polyp promptly ceases after the polyp has been twisted off and its base cauterized. However, the visible polyp may be just a local manifestation of a polypoid condition that extends to the upper cervix and to the corpus, and thus may demand a curettage of the corpus and cervix.

The cystic cervix usually responds to linear cauterization but may demand a conical enucleation, or a modified Schroeder cervical amputation. If cysts emit a bloody fluid on puncture, biopsy should invariably be performed.

All increased menstrual discharges and intermenstrual bloody discharges from the uterus beyond the field of vision should be accurately diagnosed by curettage after pregnancy and infection have been excluded. Too many times disastrous delay is caused by preparations of ergot before an accurate diagnosis is made.

A constitutional condition, due to senile changes abetted by infection and causing discharge is senile vaginitis. This condition is characterized by atrophic and inflammatory changes in the vault of the vagina causing varying degrees of constriction. The constrictions bleed so easily on attempts to disclose the cervix that the condition is often mistaken for cancer. It is not related to cancer except insofar as an irritative lesion of long standing may be related to cancer. Local treatment consists in the eradication of all trauma and infection and the application of a protective such as five per cent mercurochrome in equal parts of lanolin and petrolatum. Many cases seem to be improved by thyroid and ovarian therapy.

The general tonic treatment of all conditions in which discharge obtains, as said before, warrants constant attention. Especial care should be given to the iron, calcium and sugar levels in the blood. Psychotherapy is a continuous need because so many of these patients feel that the discharge is sapping their strength or they are tremendously apprehensive of cancer and will admit that they so feared the possibility of cancer that they put off coming for examination. Positive diagnosis that it is not cancer works a marked change for the better in their general condition. Improvement of health under general hygienic treatment should be amplified by continuous encouragement and assurance of improvement as local conditions respond to treatment. Most patients when they thoroughly understand what we are aiming at, are very co-operative.

Synopsis

The cause or causes of every vaginal discharge should be accurately diagnosesd, by exclusion, under the six basic causes of gynecologic disturbances: pregnancy, injury, infection, tumors, congenital and acquired deformities, and constitutional and functional disturbances.

In the consideration of carcinoma in relation to discharge, mortality statistics point not only to the necessity for greater care in accurate diagnosis but to the necessity of increasing our efforts to bring about periodic examinations even when no discharge exists.

Early diagnostic curettage and biopsy should be more widely used in cases of doubt.

ANTERIOR PITUITARY THERAPY*

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IT IS IMPOSSIBLE in the brief space at my disposal to discuss in detail endocrine therapy as it applies to gynecology and obstetrics. I shall, therefore, be content in this article to outline briefly the part played by anterior hypophyseal extracts in the treatment of obstetrical and gynecological abnormalities.

The anterior hypophysis has been called the Master Gland. Like most other masters, however, it is not permitted to exercise an unbridled rule. While it stimulates the ovaries and the thyroid, it in turn is inhibited directly by the ovaries and

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indirectly by the thyroid. However, it is now apparent that behind much of the pathology resulting from hypofunctioning of the ovaries and the thyroid, lies an abnormal (shall I say subnormal?) anterior hypophysis.

It cannot be too strongly emphasized that before any prehypophyseal therapy is instituted, endocrine malfunction should at least be reasonably suspected. This comment, I think, is necessary when we realize that antiutrin is being given for such impossible conditions as hayfever, chronic excema, and tuberculosis.

When the endocrine system is at fault, the disturbance of which the patient most frequently complains is menstrual irregularity. This may take the form of menorrhagia, metrorrhagia or amenorrhea. These abnormalities may also be due to a number of other physical disturbances, pelvic and general where the endocrine system is not primarily at fault. It need scarcely be said, therefore, that before endocrine therapy is instituted the patient should have a competent and thorough general and pelvic examination and a curettment of the uterus when abnormal bleeding is a symptom.

If the primary cause of the patient's trouble is of endocrine origin, the findings will be either negative or of such a nature as to rule out all causes of vaginal bleeding other than endocrine, with the possible exception of hyperplasia of the endometrium and this is seldom, if ever, a definite entity. It is merely a sign of some other gynecological condition such as cystic ovaries or other endocrine abnormality.

Pelvic findings suggestive of endocrine dysfunction, especially in the younger mullipara are an acutely antiflexed or retroflexed corpus with a long conical cervix and vaginal vaults that may not be as capacious as normal. Such a patient frequently complains of dysmenorrhea. General findings may include a basal metabolic rate which is minus eight or less, moderate or marked obesity, amorrhexia, loss of weight, weakness, and general ill health.

Specifically I have found the following patients cured or decidedly improved by endocrine therapy, always assuming that causes other than endocrine have been ruled out by curettment of the uterus and competent physical examination.

(1) Where there is mild or moderately severe menstrual irregularity especially in the remote puerperium. The menstrual disturbance may take the form of polymenorrhea, regular periods with lapses, oligomenorrhea, menorrhagia and metrorrhagia. Accompanying those disturbances may be lassitude, loss of weight, headaches including hemicrania, low basal metabolic rate, subcutaneous hematomata appearing without any noticeable trauma, amnorrhexia and general ill health. Loss of weight is probably less frequent than obesity, but I believe it is more likely to accompany the general symptoms I have described.

(2) When menstrual periods are accompanied by a skin eruption resembling simple acne.

(3) When mammary secretion is deficient. The antuitary extract used in this condition is prolactan.

(4) In some cases of relative sterilty especially where the basal metabolic rate is below minus six.

(5) In the majority of patients with menopausal symptoms. The effect here may be psychic, but at least the therapy is rational.

Some of the conditions for which I believe antuitary extracts are of little if any value are:

(1) In primary absolute amenorrhea.

(2) Where there is marked menstrual irregularity present since catamenia began.

(3) As treatment for ovarian cysts or even cystic ovaries demonstrable on pelvic examination.

(4) By the condition known as Distrophia Adiposo—Gemtalis of Frohlich.

There are some who assert that prochypophyseal therapy and thyroid therapy accomplish the same results. Such an opinion, however, is due to a misconception of the antuitary effect on the thyroid. According to our present knowledge, the effect of antuitary extract on the thyroid is an undesirable one. Prolonged administration will develop the same pathological picture as Graves disease which is prevented experimentally by the simultaneous administration of thyroid extract.

Antuitary extracts are given principally for their effect on the ovaries. Where there is an indication for their use the basal metabolic rate is almost always below minus five: and it may be said, paranthetically, that from an obstetrical and gynecological point of view a patient does not necessarily have normal thyroid function when the basal metabolic rate lies between minus five and minus ten. Antuitary extracts should be, therefore, used along with more or less thyroid extract depending on the determined basal metabolic rate.

There are now many antuitary preparations on the market. They probably have little if any value unless given hypodermically or intramus-

cularly. The former method of administration seems to be less painful to the patient. Among those preparations now available, I have found A.P.L. (anterior-pituitary-like substance) derived from the placenta of decidedly greatest value. Emmenin, also a placental derivative, is supposedly similar in its effect to A.P.L. It is also supposed to be effective when administered orally. My experience with it, however, has been far from satisfactory.

The comment sometimes heard that the effect of this therapy is due solely to thyroid extract is not supported by the evidence at hand: for, in the first place, substantially the same effect on the ovaries will be obtained without thyroid extract; and in the second place thyroid therapy alone is almost invariably only of temporary value, whereas in the mild and moderately severe cases described above, antuitary therapy is usually curative.

There is a small group of so-called conservatives who refuse to see any value in prehypophyseal therapy for the conditions I have described. They still use and advise radium, radon and Roentgen rays. Apart from the objection to this latter therapy that a higher percentage of monstrosities is born following its use, it may also be objected that it is not a physiological method of attack. The destructive effect of radium is well-known and if we have something at our disposal which is equally effective and acts in a physiological manner, that certainly should be given preference.

One objection raised to antuitary therapy is that prolonged use tends to exhaust the ovaries. With this I agree. In the conditions I have described, however, I seldom advise or have to use more than fifteen injections of two c.c. every other day. Following this course of treatment, I now have a sufficient number of three, two, and one year cures to convince me of its practical value.

THE ASCHHEIM-ZONDEK TEST IN RELATION TO GYNECOLOGICAL DIAGNOSIS*

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THE Aschheim-Zondek hormone test finds its greatest, legitimate, application as an aid in gynecological diagnosis. It ranks as one of the most reliable laboratory procedures, but it has definite limitations and should never be used to displace accurate history or clinical investigation. In this paper I will attempt to point out the value of and limitations in diagnosis using the Friedman modification of the Aschheim-Zondek hormone test.

I have performed this test with the urine of over 900 women, however, this series includes only the first 700 tests performed during a period of over three years. Three hundred eleven tests gave positive results, with eight false positives, or an error of 2.57 per cent. Three hundred eighty-nine were negative, 11 of which were false negatives or 2.82 per cent.

The test is safely applicable only after twenty or more days have elapsed from the date of conception and the farther from this date the more consistent are the results obtained. Errors on the negative side may be expected when the test is performed too early. The test is positive only as long as there is living placenta in contact with the maternal circulation. My series includes tests during this early period, with false negative results reversed by repeated tests made only a week later, thus confirming the cause of the errors.

This quiescent period limits the value of the test in ectopic pregnancy where emergency diagnosis is demanded. Separation of the placenta from the maternal organism so common in ruptured tubal pregnancy with the cessation of hormone excretion is a source of frequent unavoidable error. In this series of tests there are included fourteen cases of ectopic pregnancy. Eleven were correctly diagnosed by the test and three were missed, giving an error in this type of case of 21.428 per cent.

Case No. 1. This woman requested a test for pregnancy on general symptoms. A negative test was obtained. Three weeks later she appeared in the hospital on account of acute abdominal pains. Operation revealed a ruptured ectopic pregnancy. Error in this case is attributed to too early performance of the test. Positive reactions can not be expected until twenty or more days have elapsed since conception.

Case No. 2. Clinical examination revealed a mass in the uterine adnexa. After a negative hormone test an exploratory operation revealed an unruptured tubal pregnancy. Living placental tissue was found which from all appearances should have given a positive result. No explanation was found for this error.

Case No. 3. A small mass was felt at the side of the uterus. After a negative pregnancy test the patient was explored and large blood clot was found free, near the site of the Fallopian tube. The Fallopian tube was small and had apparently

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returned to normal size. Placental tissue was not found in the blood clot but it was considered to be characteristic of ectopic pregnancy. The cause of error in this case is attributed to tubal abortion with separation of the placenta from the maternal circulation before the test was performed. In this case there is the possibility that the hemorrhage was not caused by an ectopic pregnancy.

When the hormone is once excreted in amounts sufficient to give a positive reaction it will remain so, as long as there is placental tissue in contact with the maternal organism. Tests are said to remain positive until about forty-eight hours have elapsed after delivery or after separation of the placenta from its implantation site. The reaction may be used to aid in the diagnosis of threatened or missed abortion. The results are gratifying in these conditions. My tests also include two tests for death of the fetus in utero. Both patients were well advanced in pregnancy when the size of the uterus seemed to diminish. The urine from one patient gave a positive result and from the other woman a negative test. The positive case when delivered showed a dead fetus with some viable placental tissue, while the case with the negative reaction showed marked degeneration of both fetus and placenta.

When the gynecologist is confronted with a soft, edematous, uniformly enlarged, fibroid uterus impossible to distinguish from the pregnant uterus by palpation, this test is of great value. The nodular fibroid uterus, with symptoms suggesting pregnancy offers another insurmountable difficulty without the aid of the hormone test. The greater number of tests, excluding normal pregnancies, consists of this type of case and uniformly good results have been obtained. Ovarian cysts and adnexal disease have been uniformly negative. During the menopause difficulties in diagnosis are multiplied. The greater number give normal reactions but frequently the symptomatic cases give false positives. I have had five false positives during this period of life. All patients were suffering with nervousness and hot flashes and periods of amenorrhea and the distressing symptoms so frequent during this period of life. It appears that there is an overactivity of the pituitary body, resulting in the over excretion of prolan B, particularly in the distressed patients, which gives the false positive reactions. It is interesting to note that one of these false positives was obtained from a patient who had had artificial menopause induced by deep X-ray therapy for sterilization.

Other surgical conditions, in which this hormone test aids the gynecologist, in diagnosis and in appraisal of the success of surgical operative procedures are found in published reports. Chorioepitheliomata and hydatidiform moles give a very strong hormone reaction. The successful removal of these growths and the absence of metastases can only be determined by negative hormone tests repeated at intervals following the operation.

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A DRESSING FOR ABDOMINAL WOUNDS*

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DURING the spring of 1915 I visited the clinic of Sir Harold Stiles in Edinburgh. He used no dressings on his surgical incisions. A cradle was placed over the abdomen, to relieve pressure of bed clothes and prevent the patient from touching the incision with the hands. Skin stitches were removed on the third or fourth day, with the wound edges well healed. He attributed his excellent results to the fact that removing a gauze dressing which has been in contact with the skin edges destroys the new skin and granulations of several days' growth.

In February, 1929, I operated on a patient who had an idiosyncrasy to adhesive tape. She would develop a troublesome rash when the smallest piece of adhesive was used on her skin. We had a wire cage made, which could be pinned with

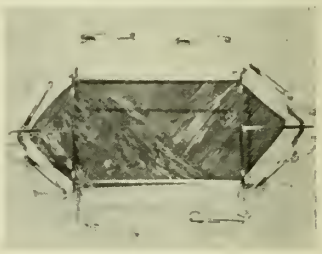


FIGURE 1
Wire cage pinned to safety pins to an abdominal binder.

safety pins to an opening in an abdominal binder. A gauze dressing was fastened over the cage with an elastic rubber band.

The cages are hexagonal in shape, the length varying with the length of the incision. They should be four inches wide, so that they do not

*Prepared especially for THE JOURNAL-LANCET.
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touch the tension sutures. The uprights are bowed out at their lower angles, to form a notch for the elastic band which holds the gauze dressing in place.

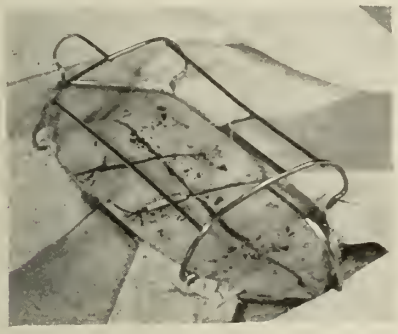


FIGURE 2
Wire cage over lower mid-line wound.

We obtained such excellent healing in this incision that we began using the cage on other cases, using adhesive strips to hold it in position. Two strips of adhesive one inch wide, five inches long, are attached to each side. Each strip is split at one end for a distance of one inch. This allows the strip to be folded back on itself one inch around the upright and leaves three inches adherent to the skin. A gauze dressing is fastened over the cage with an elastic band.

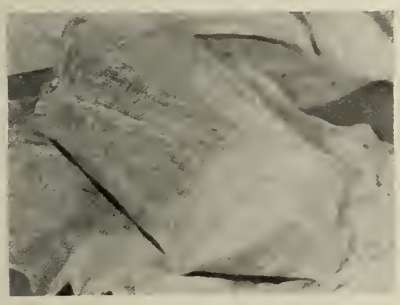


FIGURE 3
Wire cage in place covered with a thin cut gauze dressing.

We have used this method on all abdominal operations except large tumors, where pressure on the abdomen was necessary for a few days after removing the tumor, a series of over 1500 cases. More than 300 individuals in this number had been operated before. Without exception they stated that they were more comfortable with the cage than with the usual method of dressing. When the patient has to cough or vomit, a hand placed on the cage gives pressure on the abdomen well away from the tender incision, and gives a feeling of security by "splinting" the area around the incision.

One of our patients had had a severe attack of "Flu" about two weeks before her operation. On the second day after operation she developed a troublesome cough. The internist on the case insisted on my replacing the cage with a conventional gauze dressing, over the incision, held by heavy adhesive taping, extending from pubis to costal margin. After about four hours the patient asked to have the cage replaced, as it was much more comfortable during her paroxysms of coughing.

In this series of 1500 cases no incisions broke open. There were no more infected wounds than in cases where the conventional type of dressing was used. Study of these cases shows that solid healing of an incision depends on how well the tissues are sutured in closing the wound, not on the amount of adhesive placed over the surface. Also that infection of the wound usually occurs at the operation, and rarely afterwards.

Skin stitches are removed on the second or third day after operation, tension sutures usually on the tenth. The cage is left in place until after the tension sutures have been removed. In an infected draining wound, gauze or cotton can be packed inside the cage, and easily changed.

The advantages of this method are:

1. Dressings are fewer and less painful. The wound can be inspected without removing the dressing.
2. Skin stitches can be removed on the second or third day, with the skin incision usually healed. In the ordinary dressing the removal of adherent gauze destroys the results of several days' healing.
3. There is a considerable saving to the patient in the cost of dressings. Usually only two gauze "flats" are used in the entire ten days. In charity hospitals, there is a great saving for the institution, both in the cost of gauze and adhesive.
4. The dressing is more comfortable for the patient because:
   (a) The wound is protected from pressure of bed clothes.
   (b) In paroxysms of coughing or in vomiting, pressure of a hand on the cage splints the area around the incision, causing less pain and giving a sense of security.
   (c) There is less discomfort from distention. The usual wide adhesive strapping leaves

little room for expansion and distention so common on the second and third postoperative days.

5. Infected draining wounds can be easily dressed by packing gauze or cotton inside the cage.

A CONTROLLED STUDY OF THE TREATMENT OF DYSMENORRHEA*

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THE cause and treatment of dysmenorrhea is probably one of the most controversial subjects in the field of gynecology. The conflicting opinions on the subject make the need of carefully controlled studies obvious. The discussion which I shall present is an outline of one controlled study of dysmenorrhea which is now in progress.

Before discussing this study, it might be well to consider briefly the accepted theories of the etiology and the more common types of treatment of this symptom. The older literature classifies dysmenorrhea into three types: The obstructive, the spasmodic and the congestive. For many years this classification was used and all cases were assigned to one of these causes and the treatment directed toward eliminating the cause. More recently dysmenorrhea has been divided into two main types: The primary or essential dysmenorrhea, in which there is found no associated pelvic pathology, and the secondary, in which there is definite evidence of pelvic abnormality such as an inflammatory process, ovarian cyst, etc. Bell,[1] in 1923, described the primary type of dysmenorrhea under the term "intrinsic dysmenorrhea." He defines this as follows: "Pain due to some inherent abnormality in the structure of the organs of menstruation or in the physiological processes connected with that function." This type of menstrual pain has been attributed to hypoplasia of the uterus, to anteflexion of the corpus, to a conical cervix and pin-point os, to endocrine dysfunction, to a deviation of the pH value from the normal to the acid side, to constitutional or psychogenic factors, to poor posture, and to innumerable other causes. Which one or more of these conditions may be the factor causing painful menstruation is yet to be established. It is to be hoped that the intensive study of the physiology of the reproductive system which is being carried out will solve the question of the mechanism of this common and incapacitating condition.

Novak[2] has pointed out that in primary dysmenorrhea the pelvic organs are characteristically normal; that the view that dysmenorrhea is the result of an obstruction to the flow of blood because of a kink associated with anteflexion does not explain most cases, since there are frequent cases of severe dysmenorrhea without anteflexion of any kind and also very sharp anteflexion with no pain; that the evidence for hypoplasia of the uterus as a cause of primary dysmenorrhea is unsatisfactory because so many patients do not date the onset of menstrual pain from puberty but from several years later; that the constitutional factor undoubtedly will explain a certain proportion of cases where apparently there is a lowered threshold of pain which may be due to a severe anemia, tuberculosis, diabetes or any other systemic disorder; and that the psychogenic factor, although more difficult to evaluate, may be even more important. The role of certain endocrinopathies as a cause of dysmenorrhea is discussed by Novak.[2] He states: "Recent investigation upon the hormonal regulation of uterine contractility have yielded the first results which seem applicable to the clinical problem of dysmenorrhea. The very nature of the pain in these cases would, of course, suggest an origin in an exaggerated or disordered contractility of the uterine musculature. The recent investigations of Knaus, Reynolds, and a number of others throws much light upon this problem. . . . Reynolds[3] has found, by an ingenious method of study, that (1) uterine muscle exhibits a normal rhythm of contraction; (2) all uterine contractions disappear after castration; (3) they are restored by the injection of folliculin; (4) the folliculin-produced contractions are inhibited by the injection of progestin or of the urine of pregnant women; (5) the normal excitant of uterine contractility is the follicle hormone, while the corpus luteum principle, progestin, is an inhibitor."

Smith[4] has reported a small series of cases of essential dysmenorrhea which were due to allergy in which the dysmenorrhea was completely relieved on the elimination from the diet of certain foods to which the individuals were found sensitive.

It is evident that until more actual knowledge of the cause or causes of primary dysmenorrhea is obtained, any methods of therapy used are more or less arbitrary. For this reason it is extremely important that the results of any particular therapeutic measure be carefully evaluated. The litera-

*From the Students' Health Service, University of Minnesota, Minneapolis, Minn. Presented before the Fifteenth Annual Meeting of the American Student Health Association, New York City, December 27, 1934.

ture is filled with reports on the treatment of primary dysmenorrhea, each author presenting enthusiastically some one method of treatment which he believes most effective, whether it be exercise, pre-sacral sympathectomy, dilatation and curettage, hormone therapy, the administration of calcium, psychotherapy, or some other panacea. Undoubtedly, all of these therapeutic measures have been of value in certain cases, but in order to evaluate the benefit derived from any one of them, a careful clinical study with a control group should be carried out. This is especially true in the treatment of dysmenorrhea in which the psychogenic factor is so important.

Studies on the incidence of dysmenorrhea show that between 17 per cent and 40 per cent of all young women have more or less severe pain at the menstrual period. Those of us who are dealing with large groups of young women in colleges and universities not only have a large problem in attempting to prevent loss of time from this disabling symptom but also have an unusual opportunity to carry on controlled studies on the value of different therapeutic measures.

In the fall of 1933 at the Students' Health Service of the University of Minnesota we began a controlled study of the treatment of cases of dysmenorrhea. Early in 1934 Dr. Ruby Cunningham, of the University of California, Berkeley, California, and Dr. Bertha Dyment, who was then at Stanford University, co-operated in this study. The following plan was outlined:

(1) Cases selected for this study were those who had dysmenorrhea severe enough to necessitate bed rest every month.

(2) On each case a complete history was taken. (A copy of this card is reproduced below.)

(3) A basal metabolism test was done on each case.

(4) Pelvic examinations were not done routinely but only when there was some special indication for it.

(5) Several different types of medication were used which were prescribed to the patients in rotation.

(6) The same careful advice and instructions were given to all of the patients receiving each type of medication.

(7) The girls were asked to report to the Health Service after each menstrual period and a careful record was kept of the results of the treatment.

(8) Each type of medication was used for at least two menstrual periods, as it was felt that any conclusion based on the results of less than two periods would be misleading. In most cases the medication was used for three or four periods.

The treatment of dysmenorrhea directs itself toward either the treatment of the pain at the time of the period or treatment directed toward preventing the spasm of the uterine muscle which apparently causes the pain. In the study which we have outlined at the University of Minnesota we have made no attempt to evaluate different medications which are helpful in relieving pain. We have, rather, selected certain medications which have been suggested as therapeutic agents to prevent uterine spasm. To patients with primary dysmenorrhea, the following seven types of prescription were given in rotation:

(1) *Calcium gluconate.* Calcium gluconate and viosterol,† in a dosage of 120 grains daily for 10

†The tablets of calcium gluconate containing viosterol were supplied by E. R. Squibbs.

COPY OF HISTORY CARD

Name.....Age.....Weight.....Height.....Date.....

BMR..... Hb.....

Menstrual History

Age began..... Regular.....days. How long regular..... Duration.....days.

Irregular.....days. How long irregular..... Amount—scanty, moderate, profuse.

Amount variable?.....

Pain: Type—crampy, steady abdominal, backache.

When—before onset of flow.....first day....., second day.....

Nausea and vomiting..... Constipation..... Leg ache.....

Paraesthesias: hands....., feet..... Oedema: hands....., feet.....

Other History

Bruise easily.....(yes or no). Emotional disturbances before or during menses.....

Colds per year: not more than 1; 2 to 3; 4 or more; have cold large part of winter.

Allergy:

	Patient	Father	Mother	Maternal Grandparents	Paternal Grandparents	Aunts or Uncles	Brothers or Sisters
Migraine							
Hay Fever							
Asthma							
Urticaria							

Pelvic Examination

Treatment

Date	Medication	Response

days preceding the expected period, was given. With Hartley[5] we reported last year that 67 per cent of a small series of cases of dysmenorrhea were definitely benefited by calcium gluconate. Just what the action of calcium is in dysmenorrhea is not definitely known. A decreased calcium concentration tends to increase the excitability of smooth muscle, and conversely, an increased amount of calcium decreases the contractility of smooth muscle. Or, as Shaw has pointed out in connection with sympathectomy in the treatment of dysmenorrhea, the action of calcium may be on the pH value tending toward the alkaline side.

(2) *Benzyl benzoate or benzyl succinate.* Five grains of benzyl succinate were given three times a day for three days before the expected period and every two hours on the first day of the period. This therapy has been advocated in dysmenorrhea, especially by Litzenberg.[6] Benzyl compounds are known to have an anti-spasmodic effect on smooth muscle.

(3) *Ephedrine sulphate,* grains one-fourth, three times a day for two or three days before the expected period and during the first day of the period was the third medication used. Ephedrine, either alone or combined with other drugs, is prescribed by many physicians for immediate relief of dysmenorrhea. If, as has been suggested by Smith[4] and others, primary dysmenorrhea may be on an allergic basis, ephedrine in its action of preventing spasm of smooth muscle might be expected to be effective.

(4) *Oleum ricini,* in capsules of 10 minims, was given three times a day throughout the month. This dosage produces no laxative effect. It was suggested to us by a gynecologist that this dosage of oleum ricini had given relief in many cases of severe primary dysmenorrhea. Just what the action may be is problematical. If again, there may be an allergic cause for certain types of dysmenorrhea, the action of the unsaturated fatty acids in the oleum ricini may be responsible for its value. Work done by Hanson[7] and others has shown that in certain allergic conditions, especially eczemas, the administration of unsaturated fatty acids has entirely relieved the condition.

(5) *Progynon.*‡ One tablet containing 45 Allen-Doisy units of oestrin was given three times a day throughout the period. Novak,[2] Kennedy[8] and others have called attention to the fact that in certain cases where there is a real hypoplasia of the uterus the administration of oestrin either hypodermically or by mouth has been of benefit in the treatment of primary dysmenorrhea.

(6) *Exercise.* A prescribed list of exercises designed to improve the posture and increase the tone of the abdominal muscles was given to one group. The girls were advised to take these exercises daily throughout the month. The following directions for exercises were given:§

‡The progynon was furnished by the Schering Corporation.

Abdominal Exercises

It is impossible to maintain strong abdominal muscles with a relaxed posture. Therefore, if one cannot acquire and hold a good posture one will not obtain results.

Correct Posture

1. Head high, chin in.

2. Chest high, upper back flat. No increase in the lumbar curve.

3. Pelvis held at an angle of 60 degrees. This should give a firm abdominal wall.

4. When viewed from the side the body should be perpendicular to the floor.

Exercises

1. Standing in the correct position, take deep breathing exercises six to eight times, tightening the abdominal muscles at each inhalation.

2. Stand with the feet apart, hands on the hips, head high, chin in, weight well forward, twist the trunk to the right as far as possible, localizing the movement at the waist. Repeat three times, same to left.

3. Same position. Take rapid side bending right and left 10 times. Follow this by rapid twisting right and left.

4. Correct posture, hands on hips, raise right knee front and up to the chest, leg hanging at right angles with thigh, keep the opposite knee straight. The ankles should be extended and the toes pointing down. Repeat five times, same left. Then alternate knee raising.

Lying Exercises

1. Lie on the floor or hard surface with feet together, lumbar spine touching the floor, arms at the side of the body, palms of the hands facing the sides. While inhaling deeply, raise the arms above the head and down to the floor above the head. Keep the lumbar spine flat. As the arms are brought front and down, exhale. Repeat six times.

2. Mosher abdominal exercise. Lie on the back, bend the knees, arms at the sides with complete relaxation. One hand is then placed on the abdominal wall without exerting pressure to serve as an indicator of the amount of movement. The hand is then raised by lifting the abdominal wall without strain, then lowered by the voluntary

§Prepared by Dr. Bertha S. Dyment.

contraction of the abdominal muscles. The contraction of the muscles is the important item. Avoid jerky movements. Strive for smooth, rhythmical raising of the abdominal wall. This exercise should be repeated eight or ten times twice daily including during the menstrual period. The bladder should be emptied while doing the exercise. Breath should not be held while doing the exercise.

(7) *Lactose tablets,* grain 10, three times a day for 10 days preceding the expected period. This group comprised the control group. As has been said before, because of the importance of the psychogenic factor in dysmenorrhea it was felt that we should have a control group with which to compare results of the various other types of treatment.

I had hoped that we would have enough cases to give a report on the results of these various medications, but we have been unable to follow through a sufficient number of cases to give even a preliminary report on the comparative value of the treatments used. It is of interest, however, that we have had two or three girls who, after taking lactose tablets for two periods, have been completely relieved of dysmenorrhea and have had no pain since. I mention this merely again to emphasize the importance of having a control group in evaluating any type of therapy.

We realize that there are many other types of treatment that could be included in this study. Following the work of Novak[3] and Reynolds on the possibility of the corpus luteum hormone as a factor in reducing uterine contractility, a group could well be added to which would be given the anterior pituitary hormone hypodermically. Likewise, there are probably many other things which should be used. We have tried, however, not to divide the dysmenorrhea patients into too many groups, so that we might obtain a large enough series in each group to make the results of value.

Summary

1. The cause or causes of primary or essential dysmenorrhea are still unknown. There is still insufficient evidence to accept any one of the many factors which have been suggested as the cause of menstrual pain.

2. No satisfactory treatment of primary dysmenorrhea has as yet been found. Although many forms of therapy have been reported as effective, no *controlled* study of the effectiveness of any of these therapeutic agents has been made.

3. Students' Health Services have an unusual opportunity to make a valuable contribution to our knowledge of the cause and treatment of this important gynecological problem because of the number of cases of dysmenorrhea seen and because of the opportunity to follow the cases over a period of years.

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CASE REPORTS

CARCINOMA IN A CERVICAL POLYP*

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Mrs. R., white, aged 49, para II, presented herself for examination March 7, 1933. She had had no abnormal menstrual bleeding and no bloody vaginal discharge. Her complaint did not suggest any pelvic disease.

A routine physical examination was made. The gynecological findings only are pertinent to this report. *Pelvic Examination:* The perineum was fairly competent. There was a small scar in the vaginal floor. There was little laceration of the cervix. The corpus lay in second degree retroversion. The right ovary was fixed and there was a moderate grade of infiltration in the right broad ligament. The left ovary was normal. The cervix was exposed with a bivalve speculum and showed a flat, tongue-like, pedunculated, papilloma, about 3x1 c.m., presenting at the external os.

This growth was removed and the base cauterized with the actual cautery. A large Nabothian follicle was also destroyed with the cautery.

Pathological Examination (Dr. Wm. A. O'Brien): The specimen shows cystic cervicitis and beginning metaplasia and infiltration squamous epithelioma. Diagnosis: Squamous cell carcinoma, Type I.

Treatment: March 21, 1933, 50 milligrams of radium in standard silver needles (12.5 milligrams each) screened with 8/10 millimeters of brass and 1 millimeter of rubber tubing was placed in the cervical canal for 48 hours (2400 milligram hours). The patient did not report in September as directed but returned January 2, 1934, when 50 milligrams of radium (screened as stated above) was placed in the cervical canal for 40 hours (2000 milligram hours).

Deep X-ray therapy, supervised by Dr. Ude, was administered as follows:

January 25, 1934—Rt. ant. abdomen 5 M.A., 200 K.V.,

*Prepared especially for The Journal-Lancet.

0.5 c.m. copper, 1 c.m. al. filter, 50 c.m. Dist., time—30 min.

January 27, 1934—Lt. ant. abdomen. As on 25th.

January 29, 1934—Posterior abdomen. As on 25th.

Follow-up examinations have been made on April 15, 1933, July 24, 1933, and in January, April and May, 1934. No evidence of local recurrence or metastasis has been found at any time.

We have had approximately 200 cervical polypi examined microscopically and this is the only specimen in which carcinoma has been found. We feel that the prognosis in this case is exceptionally good.

PSEUDOMYXOMA PERITONEI; A CASE REPORT*

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Mrs. R. F. L. was referred to me in April, 1931. She was 68 years of age. She came in complaining of (1) something dropping out of the vagina, (2) of frequent involuntary urination, (3) of chronic constipation, (4) of bearing down sensation in the rectum.

Her family history is unimportant except that her mother died at 33 of tuberculosis.

The patient had the usual diseases of childhood. She had typhoid fever 45 years ago and she was quite ill with pneumonïa nine years ago. One year ago she had some gall bladder trouble but was not operated upon. She says that her appetite is good and she is not troubled with indigestion except that she has some pyrosis after meals and is somewhat constipated. This seems to be getting worse.

Menstruation began at 15 and she went through the menopause at age 55.

She has been married 45 years and has had two pregnancies. She has two living children, 44 and 40 years of age.

Her present illness began a year ago when she was overdoing physically. At this time she noticed a bearing down sensation in her rectum and something dropping out of her vagina. This continued to come down farther and associated with it she had frequent involuntary voiding of urine.

A general physical examination was made, the important points of which are as follows The abdominal wall was quite obese; the vagina was relaxed both anteriorily and posteriorily producing a cystocele and rectocele and the cervix uteri protruded from the vaginal introitus.

Treatment: The uterus was replaced and a soft rubber doughnut pessary inserted in the vagina. This held the cervix up in place so that on straining she did not push it out. It controlled the prolapse and urinary dribbling even when on her feet, but there developed an unpleasant odor to the vaginal discharge.

After a short time the patient noticed the passage of a small amount of blood from the vagina. Examination showed blood on the cervix and in the canal. She was advised to have a curettage. The patient asked that, if possible, the uterus be suspended so as to obviate the necessity of wearing a pessary, and with this in mind she entered the hospital on April 20, 1931.

The cervix was dilated and the uterine cavity curetted. The scrappings were sent to Dr. J. S. McCartney for pathological diagnosis. He reported that there was no sign of malignancy and we proceeded with the rest of the operation.

The cervix was amputated by a modified Strumdorff technique. When the peritoneum was opened for the purpose of doing a Watkins suspension of the uterus there poured out of the pelvis about a pint and a half of clear gelatinus fluid. This was the first inkling we had that we were dealing with any other pelvic pathology. The mucous membrane of the posterior vaginal wall was then resected and the levator muscles brought together in the mid-line and sutured with chromic catgut. The patient left the hospital in 17 days.

On June 2, she re-entered the hospital to have an abdominal operation for pseudomyxoma peritonei. The incision was made in the mid-line and extended from the umbilicus to the symphsis. A large cyst containing gelatinous material was opened into, when the peritoneum was incised. A cystic mass was found to fill the entire cavity, extending up to the costal margin. Everywhere it was adherent to the peritoneum by fibrinous adhesions. It was found to be springing from and replacing the left ovary. The pedical was clamped and resected. The abdomen was then explored. The appendix was quite small and showed no signs of involvement. The right ovary was also small and sclerotic. The uterus was bound down quite tightly in the position in which it had been placed at the former operation. Neither the appendix nor the right ovary was removed. The upper abdomen was not explored. A large quantity of gelatinous material was scooped out of the abdominal cavity and it was closed in the usual way without drains.

Dr. McCartney examined the left ovary and was unable to find any carcinoma. His diagnosis was pseudomucinous cystadenoma of the ovary. The patient left the hospital in due time and passed from my observation. Before long she went to see a confrere of mine who was good enough to let me have his record to complete the case.

August 23, 1933, Mrs. R. F. L. came to the office complaining of pain in the upper right quadrant of the abdomen. The abdomen has been gradually enlarging for several months and she thought she was putting on fat, as she has been gaining weight ever since her last operation. Urinary incontinence is still present.

Examination: The abdomen was greatly distended and a mass was felt in the lower left abdomen. A slight fluid wave was present.

September 5, 1933, second operation for pseudomyxoma peritonei. Abdomen opened through lower mid-line incision. A large cystic mass lay in the left side of the lower abdomen and pelvis. It was adherent to the mesentery of the sigmoid and attached in the region of the left infundibulopelvic ligament close to the pelvic wall. It was not connected with the uterus. The right ovary was small, normal in size.. Surface

*Prepared especially for The Journal-Lancet.

and edge of the liver felt normal. There were no other abnormal masses felt. Several quarts of slimy, gelatinous material were evacuated. There were no adhesions in the pelvis. The tumor mass was removed.

Pathological: Multibocular cyst eight inches in diameter contains mucoid material; no solid masses. *Microscopic:* Ovarian stroma in walls of cyst. Cyst lined with single layers of high columnar epithelium. No evidence of malignancy.

The abdomen was closed in layers. The wound broke open and eviscerated six days after operation. It was resutured and healed without further complications.

Note: Pseudomyxoma peritonei was first described by Werth in 1884. He thought it was always caused by rupture of a pseudomyxomatous tumor of the ovary. Fränkel, in doing an autopsy, found a man in whom a mucocele of the appendix had ruptured and filled the pelvis with semifluid material. This was the first case in which the appendix was proved to be the etiological factor.

When rupture occurs it allows viscous material to be extruded into and to cover the surfaces of the pelvic and abdominal cavities. The process may be local or general. Because of the gummy consistency of the substance, the sub-peritoneal lymphatics become clogged and a foreign body, peritonitis results. Cellular epithelial elements penetrate the mucinous material and break it up into small encapsulated masses by the formation of septa and glandular masses. These cells continue the production of the jelly-like substance which may reach tremendous proportions. Cellular elements from the peritoneum may form little glandular masses of tissue which in the gross are little whitish bodies. They range from pin head to pea size and are attached to the peritoneum or lie free in the gelatinous material. It is said that if the source of this substance is the ovary, there is little peritoneal reaction and the capsule is composed of a very light membrane. If the appendix is the source, the peritoneum is more definitely roughened. Novak quotes Trotter as saying that when the appendix is the source of the jelly, it contains mucin; when the source is ovarian, it contains pseudomucin. This has not been borne out altogether by more recent study.

Pseudomucinous cystadenomada of the ovary constitute from 2% to 4% of all ovarian cyst. Mucocele of the appendix is much less common. These range from 0.2 to 0.5. When a mucocele of the appendix does occur, it is most often of a gelatinous variety. In the female pseudomyxoma peritonei most frequently develops from an ovarian cyst; under these circumstances the amount of the fluid in the abdominal cavity is much more likely to be profuse than if it comes from the appendix. Under the latter conditions, the semi-liquid substance usually, but not always, is small in amount and confined to the pelvic cavity. In the male, the appendix or retroperitoneal tissues are the most frequent source of the disease.

LITERATURE

Frank: "In Gynecological and Obstetrical Monographs," Appleton & Co.
Novak: "J. H. H. Bulletin," May, 1922, gives an excellent bibliography.

BOOK NOTICE

A NEW REVISION OF ANSPACH

Gynecology, by Brooke M. Anspach, M.D., professor of gynecology in the Jefferson Medical College; assisted by Philip F. Williams, M.D., assistant professor of obstetrics, University of Pennsylvania; and Lewis C. Scheffey, M.D., assistant professor of gynecology, Jefferson Medical College. Fifth edition, reset, re-illustrated, and completely revised; 832 pages, 679 illustrations (10 in color); Philadelphia: The J. B. Lippincott Co.: 1934.

Anspach's *Gynecology* is so well-known by this time to the obstetrician and general practitioner that a review of it would be superfluous. This volume, however, is completely revised, reset, and, in some instances, re-illustrated.

The newer uses of radium and radium implantation in gynecology are indicated, as well as the comparatively recent uses of electrocautery. A particularly fine chapter on back-ache is included, and the endocrines are discussed and considered in the light of the most recent advances in this as yet obscure and devious field.

There is a good dissertation on office and bedside treatment, and a thorough consideration of ectopic pregnancy.

Ten of the illustrations are in color, and the rest are beautifully engraved and presented. The printing is excellent, and is enhanced by the fine quality enamel paper which the publisher selected for this volume.

The
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W. L. Klein, 1851-1931

MINNEAPOLIS, MINN., FEBRUARY 1, 1935

THE ROUTINE LABORATORY EXAMINATION OF ALL MATERIAL COMING FROM THE GYNECOLOGICAL OPERATING ROOM

In 1893 I took charge of the gynecological laboratory at the Johns Hopkins Hospital. My chief, Dr. Howard A. Kelly, wanted every piece of tissue removed at operation carefully examined both macroscopically and microscopically. My laboratory was on the first floor of the Pathological Building, and whenever I was in doubt as to the diagnosis of a given specimen, the late Professor William H. Welch explained the condition and told me just what was wrong.

For over forty years practically every piece of tissue removed in the gynecological operating room has been carefully examined in the laboratory, described, and slides of the case filed away. These slides can today at a moment's notice be consulted.

The routine laboratory examination reminds me of placer mining. All tissue is put through the laboratory pan and the nuggets carefully picked out. Every now and then something brand new, something that has never been noted before, is found. This is studied further and the results published.

Every now and then a routine examination of a curetting will yield an unexpected and early carcinoma of the body of the uterus. The patient is then operated on immediately; here the prognosis is excellent.

The man who pays little attention to the examination of operating room material is like the man who builds his house upon the sand. Some of the older surgeons had little training in pathology; the younger surgeons have no excuse for not being well versed in the pathology of their given branch.

When the surgeon who is well versed in pathology opens an abdomen, he every now and then finds some small clue, an area not over one cm. in diameter, that clearly tells him that to attempt a complete removal of the condition would be impossible and that it is better to close the abdomen at once. On the other hand, every now and then some little clue in the abdominal picture will clearly indicate that he may successfully remove the growth, when to the untrained man failure seems inevitable.

Three things are as clear as the noonday:

1. Every hospital should have a well trained pathologist.

2. Every young gynecologist must have a thorough knowledge of gynecological pathology.

3. Every operating room, if it is doing its duty to the patient, must send all its specimens at once to the laboratory and have them carefully examined.

Thomas S. Cullen, M.D.

THE MORTALITY FROM CANCER OF THE UTERUS CAN BE REDUCED

Cancer of the uterus occupies a favorable position among internal malignant growths, which is quite unique. The suspicious symptoms appear relatively early, the uterus is accessible for diagnosis and treatment; furthermore precancerous conditions can be detected and removed before malignancy develops. Indeed, cancer of the uterus is virtually an external growth. Yet, in spite of these fortunate conditions which facilitate early diagnosis and prompt treatment, cancer of the uterus maintains the same appalling death rate as malignancy in any other location.

Until the cause of cancer is discovered, our only hope of reducing the mortality lies in prophylaxis, early detection, and immediate treatment. Women must be taught by their physicians that irregular or excessive menstruation, intermenstrual bleeding and chronic discharge are possible indications of cancer which demand investigation. Bleeding or discharge after the menopause nearly always means cancer.

Too many physicians fail to attach sufficient importance to these early signs of malignancy. They are so common and so frequently due to benign conditions that most women and some physicians are prone to view them with the "familiarity that breeds contempt."

If more physicians would impress upon their patients the necessity of periodic examinations, would suspect malignancy in every woman having chronic discharge or anomalous bleeding and would immediately begin diagnostic procedures, many more early cancers would be detected.

When suggestive symptoms appear, awaiting distinct evidence is too often the policy. During this delay the disease frequently becomes incurable. Delay of treatment, even of a week, increases the mortality. An investigation, at the Huntington Memorial Hospital, in Boston, revealed the astounding fact that delay increases the death rate of cancer of the uterine cervix by four per cent a week. When suspicious symptoms arise, a biopsy and diagnostic curettage should be done forthwith, for cure depends upon early diagnosis, followed by immediate treatment.

At the Memorial Cancer Institute, University of Minnesota, early cancer of the uterus is infrequently seen, advanced carcinoma is the rule. Twenty-five per cent of the patients have been examined by physicians several months before admission, when the diagnosis should have been made. In many instances the physician had suspected or even diagnosed cancer, yet the application for admission was delayed weeks and even months.

Cancer doesn't take long to become incurable. Delay means death.

The discouraging death rate of cancer of the uterus is not due to failure of treatment, but to the failure to make an early diagnosis.

Present day therapeutic measures are very encouraging. Without doubt more than fifty per cent of women with cancer of the uterus, instead of the present rate of less than twenty per cent, could be saved if diagnoses were made early enough. "There has been too little enthusiasm in taking advantage of the knowledge we already have." (Martzloff.) Not only could thousands of women be saved on account of the ease of early diagnosis and prompt treatment, due to the accessibility of the uterus, but for the same reason prophylaxis is possible in contradistinction to malignancy in many other locations.

Cancer of the cervix uteri is an exception to the general hopelessness of prophylaxis.

The precancerous condition is known and can be cured. The one known etiological fact is that cancer grows only in sites of chronic irritation, notably the lip, mouth, stomach, rectum, breasts and uterine cervix. "Cancer never begins in a healthy spot" (Bloodgood). If any cancer can be prevented, it is cancer of the cervix uteri.

No malignant growth is more constantly antedated by precancerous pathological changes—chronic irritation—than cancer of the uterine cervix. Birth injuries expose the cervical glands to infection, with resultant leukorrhoea, erosion, hyperplasia, nabothian cysts, blood and lymph stasis; and most important of all, epithelial cell proliferation, which is but a step from malignancy.

In this pathological picture the stage is all set for the entrance of that unknown factor which determines whether or not cancer shall occur.

"Let every cervicitis be approached, not as a cervical catarrh, or an hypertrophy, or a laceration, but as the prologue to an epithelial drama, whose curtain may be a malignant death." (Matthews).

Cervicitis is practically an external disease, which from its inception, develops under the eye and at any time may be cured before reaching the malignant stage.

If cancer cannot grow where there is not chronic irritation, then most women can be rendered immune to cancer of the uterine cervix.

The specialist sees relatively few cases, the family physician many. Here is the great opportunity for service for the general practitioner.

He can educate women to the periodic examination and thus serve ten women where he now sees one. He can make them familiar with the fact that leukorrhoea, irregular and excessive menstruation; intermenstrual and post-menstrual bleeding are danger signals which may be due to malignancy.

If he will heed the early symptoms of cancer, treat all infected cervices, take biopsies, cure abnormally bleeding uteri, secure microscopic diagnoses and when cancer is found, insist upon immediate treatment, he will have the satisfaction and glory of accomplishng that which has not yet been realized—a reduction in the mortality from cancer of the uterus.

J. C. Litzenberg, M.D.

Proceedings of the Minneapolis Clinical Club

REGULAR MEETING JANUARY 10, 1935

President, Dr. Erling W. Hansen, in the chair.

Ophthalmological Aspects of Thyroid Disease

Walter E. Camp, M.D.

My chief object tonight in bringing this subject up for discussion is two-fold. First, because it is one which interests most all of us, i. e., internists, surgeons and ophthalmologists, and secondly, because so little is known of the pathogenesis or methods of production of the ocular symptoms and signs found in Basedows' or Graves' disease.

Practically all of the ocular pathology present in hyperthyroidism is limited to the extra ocular-muscles, the lids, conjunctiva, and structures of the orbit. Aside from a few reported cases of retrobulbar neuritis, the structures of the eyeball proper are seldom, if ever, involved except secondarily in cases of malignant exophthalmos.

The cardinal ocular signs present in hyperthyroidism are well known to all of you, but I shall mention them briefly. First—Von Graefe's sign—a lagging of the upper lid in downward rotation of the eyeball. This sign is present in from 30 to 50 per cent of cases. Fuchs has shown also that occasionally there will be an actual elevation of the upper lid on looking downward.

Second—Dalrymple's sign—a definite tonic contraction of the levator muscle of the upper lid widening the palpebral fissure and producing the classical staring appearance. This sign may be accentuated or attenuated by the amount of exophthalmos but is entirely independent of it.

Third—Stellwag's sign—incomplete and infrequent winking. This sign frequently is absent, the winking reflex being normal or even increased in frequency.

Fourth—Moebius' sign—weakened and unsustained convergence power. This sign is independent of muscular paralysis but is obviously greatly influenced by the amount of exophthalmos present.

Fifth—The fifth and most obvious sign is the exophthalmos or proptosis. It occurs in from 70 to 90 per cent of all cases. It may be unilateral or bilateral, or may be entirely absent even after measurements with the exophthalmometer. Very often the amount of exophthalmos is unequal in the two eyes and occasionally it may be so great in amount as to prevent closure of the lids causing ulceration of the cornea. These later cases of malignant exophthalmos require early surgical intervention to preserve vision.

Attempts to explain the etiology of these various ocular signs found in hyperthyroidism has made interesting study. The exophthalmos has received more attention probably because it is one of the three cardinal signs of the Graves' disease. The earliest concept was that it was due to a stimulation of the cervical sympathetic, causing contraction of a cone or incomplete cone of smooth muscle fibers in the orbit. (Muscle of Müller and Landström). Experimental exophthalmos has been produced in animals by stimulation of the cervical sympathetic. However, in man this muscle is so poorly developed it would appear to have little influence on the position of the eyeball. Suker has reported cases of Graves' disease showing exophthalmos superimposed on Horners' Syndrome Complex. He reports two such cases and believes that they prove that the exophthalmos is not due to stimulation of the sympathetic. Supporting his theory also is the fact that there is no dilatation of the pupils as should occur in stimulation of the cervical sympathetic.

It has also been pretty clearly shown that the

exophthalmos is not due to excessive deposits of orbital fat as advocated by Foster Moore and earlier by many others.

Plummer, Wilder, and Benedict, in a paper read before the American Academy of Ophthalmology and Otolaryngology in Chicago last fall gave the results of a pathological study of the orbital muscles and tissues removed at autopsy and at operation on cases of malignant exophthalmos. They found the extraocular muscles greatly hypertrophied (muscles belly diameters increased four or five times) with marked degeneration of the muscle fibers, fibrosis, lymphocytic infiltration, and mucin deposits in the muscles. Excessive fat was not present. Burch also reported marked hypertrophy of the orbital muscles and edema of orbital tissues in cases of exophthalmos.

The etiology of the lid lag—Dalrymple and Moebius signs are still unsettled. K. Velhagen, Jr., shows clinical and pathological evidence that these ocular changes are due to lesions in the mid-brain—definite gliosis and cellular infiltrates have been found in this part of the grain in cases of lethargic encephalitis with identical ocular signs as found in Graves' disease. Suker substantiates Velhagen and reports similar cases from Cook County Hospital. Figenbaum reports two cases of children with internal hydrocephalous lesions in the same area of the mid-brain and with the same ocular signs as present in hyperthyroidism.

Sukor believes that the mid-brain lesions producing the ocular signs are caused by a toxin or product from the pathologic thyroid in Graves' disease.

Plummer and Wilder also believe that the exophthalmos is possibly caused by a hormone or toxine which affects the extraocular muscles, causing degeneration and subsequent weakness. This muscle weakness has also been demonstrated in the quadraceps femoris and in addition a clinical correlation of the weakness in the eye muscles and the leg muscles has been demonstrated.

If the foregoing deductions are true they would greatly support the "two-product" theory of Plummer, i. e., a separate product from the thyroid responsible for the increased metabolic rate and another responsible directly or indirectly for the ocular pathology.

James K. Anderson,
Secretary.

PROCEEDINGS OF THE MINNEAPOLIS CLINICAL CLUB

Regular meeting, Thursday, December 13, 1934. President, Dr. Erling W. Hansen, in the chair.

Case Reports: Tumors of the Nose and Throat

Lawrence R. Boies, M.D.

For some time I have had a special interest in tumors of the nose and throat. For the past three and one-half years I have had the privilege of caring for the cases coming to the University Hospital. I am indebted to the Cancer Institute and the Division of Otolaryngology for this opportunity. During this period I have cared for approximately one hundred cases of tumors of major significance in the nose and throat exclusive of the lesions in the oral cavity and the esophagus. Tonight I wish to exhibit a number of patients who will illustrate various aspects of our problems in diagnosis and treatment.

The first case is one of a squamous cell carcinoma of an antrum which was treated three years and nine months ago and today is clinically well and has no particular discomfort except that which may be incident to wearing a dental plate extensive enough to cover the defect in his hard palate. This gentleman was 49 years of age when first seen. He gave a history which dated back three years when he first noted some vague discomfort over the right cheek which later increased to swelling and eventually to discharge from the right nostril. He was given "lamp treatment" and later consulted a dentist and had some teeth pulled. Apparently there was some improvement inasmuch as the swelling decreased, he thinks, and he had less discomfort for a while. Eventually, however, the palate began to bulge and the tumor tissue broke through. A biopsy showed it to be a grade 4 lesion. Preliminary to exposing the growth by diathermy removal of the palate over the floor of the involved antrum, the external carotid artery was ligated. The involved area was then exposed, the tumor tissue removed, the margins coagulated with the diathermy current, and radium was placed in the cavity to give an adequate dosage. You can observe the cavity through the mouth; it is completely healed.

This next patient is now 71 years of age. She was first seen a year ago. At that time her chief complaint was one of pain in the right upper jaw. This was about her only symptom. Her family physician was suspicious of the symptom because it had persisted for several months and was getting worse. An X-ray study of her

sinuses is represented in these plates which indicate a chronic inflammatory process, but not enough change to make a diagnosis of a malignant growth. An exploration was made of the antrum through the canine fossa and a biopsy of the tissue found, revealed a squamous cell carcinoma, grade 3. An adequate exposure was obtained by removal of the antrum floor through the mouth with the aid of the diathermy. The tumor tissue was removed, the margins coagulated, and the area exposed to radium in sufficient dosage. A course of deep X-ray therapy was also administered. Preliminary ligation of the external carotid artery was not performed because of the limited extent of the lesion. The patient is now having a dental plate made to cover the defect in her palate. The most interesting feature of this case is the early diagnosis.

This lantern slide showing another case of carcinoma of an antrum illustrates another approach for exposure and treatment. This woman was 49 years of age when first seen because of swelling of her right cheek, pain and nasal discharge on the involved side. Her family physician noted the bulge in the anterior wall of the antrum, and found that the growth had apparently broken through the canine fossa. He biopsied the growth and established the diagnosis of a squamous cell carcinoma, grade 4. The exposure was made directly through the anterior surface of the cheek and the lesion treated in the same manner as the two cases shown. It is now two years and nine months since this treatment and there is no evidence of recurrence. The opening in her cheek has been closed by a plastic procedure. The cavity of the antrum can be observed through the canine fossa.

Large series of cases of carcinoma of the antrum operated upon show approximately 39 per cent of five year cures in primary growths in the antrum and 60 per cent five year cures in tumors invading the antrum secondary to growths originating in the palate.

The next case is one of an unusual and rare tumor in this location, a chondroma, which apparently originated in a cartilaginous rest in the ethmoid plate and enlarged to block the right nasal fossa, push through the right lateral nasal wall into the right antrum, and cause considerable necrosis by pressure into the right ethmoidal labyrinth, as well as partial blockage of the left nasal fossa. This first X-ray view indicates the extent of the tumor. Surgical removal of the tumor was advised at the time of the first examination but was declined. Three months later the patient returned because of an intense sphenopalatine ganglion neuralgia precipitated by an acute sinusitis. When the acute symptoms had subsided, the tumor was partially removed by an approach through the canine fossa. A submucous resection was later done to remove additional tumor tissue and finally the remaining tumor was removed through an external ethmoid approach. By rather conservative measures, the neoplasm was removed over one year ago; to date there has been no evidence of recurrence and he has free nasal respiration.

This lady is 76 years of age. She has known that she had a growth in her upper jaw for many years. If the history is reliable it is possible that it has existed approximately 25 years. About seven years ago, a late surgeon of this city operated on her for a growth in the nasopharynx. The pathologist's diagnosis at that time was adenocarcinoma. The hospital record of this incident relates only the fact that a growth was removed from the nasopharynx and furnishes no other details. I first saw her over a year ago at which time a history was obtained of a gradual increase in nasal obstruction to the point of complete blockage on both sides and, in addition, a marked swelling of the right upper jaw. Medical attention was made urgent by repeated nasal hemorrhage. At the time of her first visit, tumor tissue was protruding from each vestibule of the nose and the nasopharynx was filled with the growth. The whole palate bulged downward and the right maxilla was distorted in addition to an unusual prominence of the ramus of the right mandible. A small piece of tissue was removed from the protrusion in the nasal vestibule for microscopic study. The hemorrhage resulting was profuse and checked with difficulty. An X-ray study showed this extensive change in the upper jaw and the marked erosion which you can see in these films. The ramus of the right mandible had been markedly eroded by pressure. The biopsy showed an adenocarcinoma of the mixed type. Obviously, an attempt at surgical removal of the tumor was out of the question.

A series of X-ray treatments was given. There was some regression of the tumor mass. The right external carotid artery was ligated and a week later, the left external carotid was similarly treated. A prominent bulge in the palate was then incised with the diathermy point and a large amount of soft spongy tissue curetted from the right maxilla and the nasal fossae and the nasopharynx. Radium implants (radon emanation) were then implanted in the entire area involved. The change in the size of the tumor mass was marked following this treatment. To-

day, a year after the treatment, nasal respiration is free and the active elements of the growth have apparently been brought under control for the present. You will note in viewing her oral cavity that the area excavated through the palate has healed over. The interesting features of this case are the extensive growth of the tumor, and the fact that it has been controlled by the methods described, perhaps for a sufficient time to prevent its being a cause of fatality.

Tumors of the pharynx, palate, or tonsil often grow to considerable size before they are detected; and when first noted they are sometimes accidentally discovered by the dentist, or when the patient brushes his teeth or happens to examine his mouth with the aid of a mirror. This lantern slide depicts the case of a young man of 23 years who first noted a year ago that he had a fullness just behind the angle of his jaw on the right. This swelling was accidentally palpated while he was shaving. He consulted his physician who found a swelling apparently involving the right tonsil. This was incised because of the suspicion of peritonsillar abscess, but no pus was obtained. Two other physicians were consulted in the course of the next months and the swelling was incised again on three different occasions without any improvement. This lantern slide is a photograph of the patient at the time of our first examination. You will note the swelling as seen through the open mouth. It involved the space in the soft palate behind the tonsil. There was a perceptible bulge from this through the pterigomaxillary fossa to be felt external to the angle of the jaw on the right. The laboratory tests, X-ray studies, etc., were negative. The patient was afebrile.

An external carotid ligation was performed, the right tonsil removed and a large firm tumor mass enucleated without difficulty, after it had been dissected free by the use of an idex finger. This is a photograph of the tumor which on section proved to be a fibroma. The surprising aspect of this case is the unusual size of the growth; you will note that it is about eight centimeters in its greatest dimension. It is also a rare type of tumor to find in this location.

This next gentleman who is 65 years of age, was first seen in December, 1933. His only complain was that he felt as if he had had a "sliver" in his throat for the past three months. On examination with the laryngeal mirror, a small ulcerated area measuring about 1 cm. in length was noted along the margin of the epiglottis. A tentative diagnosis was made of squamous cell carcinoma. The epiglottis was removed with diathermy and microscopic study of the tissue revealed an early carcinoma, grade 2. To accomplish this removal efficiently, a very useful apparatus is the suspension laryngoscope. I have here the part which is inserted and spread to give a direct view of the larynx. The patient is under a general anesthetic, lying on his back on the table. After this is inserted it is hung to a cross bar above the table; this bar, through its attachment, can be raised or lowered or moved forward or backward by turning a crank at the site of its attachment to the operating table.

The chief interest in this case lies in the fact that an early diagnosis was made, and that removal of his epiglottis has caused him practically no difficulty in deglutition.

This little girl is now 11 years of age. She has had multiple papillomata of her larynx for about one year. Three removals had been done without any real benefit. About eight weeks ago, she had a marked amount of stridor and it was necessary to do a tracheotomy. This was performed under local anestheisa. Two weeks later she was placed on the suspension laryngoscope and a specially prepared radon bomb placed in the laryngeal cavity and moved about for almost an hour. By this method the involved area was given 185 millicurie hours of radiation. Yesterday, six weeks after this treatment, I examined the patient again with the suspension laryngoscope. During the period of six weeks she recovered a strong voice. Previously she had only been able to speak with a hoarse whisper. This examination revealed vocal cords free of papillomata. There was only a small protrusion on the surface of one false cord. A smaller dose of radon emanation was given at this treatment (65 millicurie hours).

I shall re-examine this larynx in another six weeks. The tracheotomy tube will be left in for six months after all sign of the growths has gone.

This next case is one of carcinoma of the larynx in which a total removal of the larynx was done six months ago. I first saw this gentleman in August of 1933. He had been hoarse for three months. A growth was discovered on the under surface of one vocal cord. A biopsy revealed that a squamous cell carcinoma, grade 3, was present. A thyrotomy was performed under local anaesthesia and the involved cord with a block of tissue was removed. The patient had been previously advised that a total removal of the larynx might be indicated, but he declined this, wishing to take the chance and preserve a useful voice without the necessity of resorting

to an instrument. At the time of the operation I felt that the extent of the growth made the chance of recurrence probable. Within one month of the operation he was back at his occupation of selling groceries. I watched the larynx closely and in six months there was evidence of recurrence.

The total removal was accomplished without delay. This was done under local anaesthesia. The patient has remained well to date and will demonstrate an excellent voice with his artificial larynx.

Discussion

Dr. E. S. Platou: I should like to ask a question in regard to the etiology of these papillomata?

Dr. L. R. Boies: We do not know what causes them. I suppose they probably occur for the same reason that the ordinary warts develop on the skin externally. The factor of some sort of irritation may be a prominent one. However, we have all seen individuals who have been subject to considerable irritation who do not develop these growths. Some believe that in pinching off these papillomata of the larynx, juice may be squeezed out which will cause reimplantation. There is some clinical evidence to support this contention.

Dr. E. S. Platou: Does not mechanical interference predispose to one type? I had always considered these as a clinical entity.

Dr. L. R. Boies: I doubt it. Granulation tissue may form around a tracheotomy tube or from inflammatory changes within the larynx. These multiple papillomata seem to be a clinical entity.

Dr. O. J. Campbell reported a case of traumatic injury to the inferior vena cava. The case was that of an eleven year old boy who, in a coasting accident, was thrown against a tree and sustained complete avulsion of the right renal vein with a 4½ cm. tear in the inferior vena cava. The case was treated by the application of laterally placed forceps which were removed on the fourth day. The patient recovered completely without evidences of the establishment of collateral circulation.

Dr. Campbell discussed injuries to the inferior vena cava and the various methods of controlling hemorrhage from large vessels without ligature.

The case will be reported in detail at a later date.

Discussion

Dr. H. M. N. Wynne: In cases of vena cava injuries what method was used to control bleeding while the vein was sutured?

Dr. O. J. Campbell: In no case was a detailed description given but the best method would be by finger pressure. The use of instruments to obstruct the lumen of a vessel which requires repair is inadvisable. Frequently, damage to the intima by instrumental pressure will result in thrombosis and defeat the purpose of the operation.

Dr. H. M. N. Wynne: You would have to apply pressure above and below.

Dr. O. J. Campbell: Yes, serious back bleeding would result unless pressure was also used above. Since suture of the vena cava is technically difficult the most desperate cases are probably treated by ligature or forcipressure. This fact may account for the greater mortality rate with these methods. Often death may result from complications such as hemorrhage or infection and not as the result of the ligature.

Dr. H. M. N. Wynne: Some years ago while removing a large intraligamentary myoma I was pulling rather hard while trying to get room for clamps on the left side when there was a tremendous gush of blood. I hastily packed the left side of the pelvis and had to go through the broad ligament on the right, cutting a displaced ureter, and exposed the iliac vessels. There was a longitudinal slit about an inch and a half long in the external iliac vein which I sutured, using finger pressure to control the bleeding while suturing. There was no secondary hemorrhage. Technically, of course, the vena cava is much harder to suture.

Dr. E. T. Evans: Inasmuch as we are talking about ligation of vessels in general, rather interesting complications arise in stripping the femoral artery, brachial artery and so on, in various vessel disturbances, as advocated by Leriche. I had a harrowing experience in bilateral stripping of the femoral artery. After the second artery was tripped it split for about one inch and, of course, there was a terrific hemorrhage. I put my finger on it, and, luckily, the night before I was reading over Leriche's work and he said this should happen to every surgeon who did any vessel surgery at all so that he could appreciate that it is not as dangerous as it would seem; simply wrap the vessel in fresh muscle. It is surprising to anyone to see how beautifully it controls the hemorrhage without blocking the artery. It is a thing that is well worth knowing; in a large vessel tearing that cannot be sutured, wrap the fresh muscle about the vessel.

BACTEREMIA, CLINICAL STUDY OF FIFTEEN CASES

DR. C. A. MC KINLAY

(Summary)

If therapy is to be correctly evaluated, the clinical description of septicemia in addition to the report of blood cultures must be complete. To compare, for instance, the results of treatment in a heterogeneous group of infections, often surgical, that have shown positive blood cultures and in which recovery has frequently occurred with generalized staphylococcus septicemia here reported is to confuse the issue. The favorable mortality rate, instead of being a measure of the results of specific treatment followed in a mixed group, may be an index of the frequency and efficiency of taking blood cultures in all types of infections.

(Paper to be published later)

Discussion

DR. H. M. N. WYNNE: I should like to ask if it is not true that in patients having chills with pyelonephritis a positive blood culture can be obtained about the time of a chill?

DR. E. W. EXLEY: In regard to Dr. Wynne's question, W. W. Scott of New York, some years ago, ran a series of blood cultures on patients who had some type of urethral or ureteral manipulation and he found that in the first one hundred cases when he had blood cultures taken at the time of the chill that he obtained positive blood cultures in over 83 per cent, showing that most of these things that we call catheter fevers or urethral chills are probably these momentary bacteremias which Dr. Ulrich spoke of.

DR. E. T. EVANS: The only comment I would like to make is that from the clinical standpoint it seems that we have different types and degrees of bacteremia of staphylococcus origin. We always look upon osteomyelitis as a blood borne infection, one which originates, if careful enough examination is made, in 97 per cent of the cases from a furuncle, infected toe-nail, scratch on the foot or some such thing.

Out of 62 cases of acute osteomyelitis which I reviewed at the University Hospital some three years ago, we ran 28 positive blood cultures of staphylococcus the first day. The clinical type of bacteremia decides severity rather than the presence or absence of a positive blood culture. I feel that if we took routine blood cultures every day on those cases 98 per cent to 100 per cent would at some time show positive blood cultures.

JAMES K. ANDERSON, M.D.,
Secretary.

NEWS ITEMS

Dr. Henry B. Nobles, Howard, S. D., died suddenly at Manchester, Iowa, while visiting in that city.

Dr. R. V. Sherman, Knapp, Wis., has joined the staff of the Bratrud Clinic, at Thief River Falls, Minn.

Dr. John C. Fawcett, Devils Lake, N. D., is in New York City, where he will take a course of study in surgery.

Dr. Fred A. Erb was re-elected president of the Hennepin County Tuberculosis Association for the coming year.

Dr. Wm. Nygren, formerly located at Grasston, has moved to Braham, Minn., where he will continue general practice.

Staples, Minn., may have a new hospital if plans that are now being developed by the Commercial Club of that city are realized.

Dr. Caroline Helmick, St. Paul, has recently been appointed instructor in physical education at the Carlton College, Northfield, Minn.

Dr. and Mrs. A. T. Haas, Missoula, Mont., have departed for Europe, where the doctor will take a years post-graduate work at Vienna.

Dr. J. C. Dunn, has been named as county health officer, and Dr. C. W. Wilder, as county physician. Both are located at Lewistown, Mont.

Dr. E. S. Stenberg, has been elected chief of staff of the Sioux Valley Medical Hospital at Sioux Falls, with Dr. A. Hayden, as secretary.

Hot Springs, S. D., have the promise that one of the four Infantile Paralysis hospitals, that the government will establish this year, will be located in that city.

Dr. W. C. Wolverton, Linton, N. D., physician and civic leader for many years, died at his home in that city last month after a short illness, the result of a heart attack.

After 35 years of active practice, Dr. E. L. Syverson, Centerville, S. D., has decided to take a few months vacation and is now enjoying the warm days down in Florida.

The South Dakota State Medical Association have started a broadcast over the WNAX for each Sunday evening, at 6:45 and to be continued during the balance of this year.

The Winona County Medical Society have elected Dr. E. E. Christensen, president; Dr.

H. W. Satterlee, vice-president, and Dr. I. W. Steiner, secretary, for the year 1935.

Dr. E. J. Huenekens, head of the pediatrics department at General hospital, Minneapolis, resigned Feb. 1, to return to private practice, having served the hospital for over 20 years.

Dr. J. G. Parsons, Crookston, Minn., was the guest speaker at the January meeting of the Grand Forks Medical Society, his topic being, "The Cultured Side of a Doctors Life."

At the annual meeting of the Medical Society, recently held at Devils Lake, N. D., Dr. B. Sedlacek, was elected president; Dr. J. G. Vigeland, vice-president, and Dr. G. F. Drew, secretary.

Dr. and Mrs. V. H. Gardner, Fairmont, Minn., have left for an airplane trip to Havana, where they will spend several weeks, then return via Florida, where they will remain until the warmer weather returns in their home city.

Dr. Owen Harding Wangensteen, Minneapolis, and Drs. W. M. Boothby and E. C. Kendall of Rochester, were among 25 men selected by deans of United States medical colleges as having contributed to medical progress in 1934.

As a result of the annual election of officers of the Aberdeen Medical Society recently held, Dr. Robert Hill, Ipswich, was named president; Dr. J. L. Calene, Aberdeen, vice-president, and Dr. R. G. Mayer, Aberdeen, secretary.

North Dakota Anti-Tuberculosis Association recently elected Dr. Fannie Dunn Quain, Bismarck, president; Dr. B. K. Kilbourne, Fargo, vice-president; Mrs. E. J. Taylor, Bismarck, secretary, and a board of directors of 24 members.

Duluth is entered in the national inter-chamber health conservation contest for the fifth consecutive year, and data relative to sewage disposal, population increases, water supply, etc., is being gathered by Dr. M. G. Gillespie again as the chairman of the unit.

Dr. Henry R. Diessner, who had been in active practice at Waconia, Minn., for nearly a half century, died recently at a Minneapolis hospital, at the age of 80 years. Dr. Diessner is survived by two sons, Dr. Henry D., Minneapolis and Dr. William D., Waconia.

At the annual meeting of the Swift-Kandiyohi-Meeker Medical Society held at Willmar, Minn., the new officers elected are: Dr. Fred W. Behmler, Appleton, president; Dr. Oscar Daignault, Benson, vice-president, and Dr. C. L. Scofield, Benson, secretary.

At the annual meeting of the Blue Earth Medical Society held at Mankato, last month, the following officers were elected: Dr. A. E. Sohmer, Mankato, president; Dr. Fred Franchere, Lake City, vice-president, and Dr. H. Huffington, Mankato, secretary.

The South Dakota State Medical Association will meet at Pierre, May 13-14-15. The Council and House of Delegates will meet Monday, May 13, in the afternoon and evening. Scientific Sessions will be held the 14th and 15th—clinics in the forenoon and papers in the afternoon.

Dr. J. W. B. Wellcome, one of the prominent physicians of Sleepy Eye, Minn., passed away at his home in that city last month, after an illness of many years. Dr. Wellcome was 66 years of age and had been in active practice for nearly 40 years, devoting much of his spare time to civic affairs.

The Minnesota State Board of Medical Examiners won a point in its move to revoke the license of Dr. Clayton E. May, Minneapolis, now serving a term in Leavenworth, for harboring John Dillinger, when the attorney general ruled the board was within its legal right in serving a citation to show cause on the physician.

Officers of the Ramsey County, Minn., Public Health Association honored the late Dr. H. Longstreet Taylor this year as the "Trudeau" of Minnesota, because it was through his initiative that Minnesota obtained its first sanatorium for the care of consumptives and developed an outstanding sanatorium program, that has obtained national recognition.

The thirteenth annual meeting, which will commemorate the foundation of the Minneapolis Surgical Society, will be held in the Minneapolis Club on the evening of Thursday, February 7. Dinner will be served at 7:00 p. m., following, will be the address by the guest speaker, Dr. Emil Goetsch, Professor of Surgery in the Long Island College of Medicine. His subject will be "Criteria of Operability for Thyroidectomy."

The Sixth District Medical Society met in Bismarck, December 11. Dr. A. D. McCannel, Minot, presented a paper on "Bronchoscopy and Esophagoscopy," and Dr. R. W. Henderson, Bismarck, a paper on "Acid Base Reaction of the Body Fluids and Tissues." Officers were elected: Dr. W. C. Wolverton, Linton, president; Dr. F. D. Quain, Bismarck, vice-president; Dr. L. W. Larson, Bismarck, secretary-treasurer, and Dr. V. J. LaRose, Bismarck, censor.

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Poliomyelitis*

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Minneapolis

WHETHER poliomyelitis is a relatively new disease or one of the oldest is a question that has not been settled. Hippocrates[1] in his original works describes an epidemic of paralysis in which he states that "following a summer of severe and continued drought and an autumn of heavy rains, paraplegia set in during the winter; attacking many, some of whom died speedily." There have also been many archeological discoveries, paintings, etc., a study of which might lead one to believe that poliomyelitis existed in the early ages. No doubt most of these deformities were due to trauma, birth injuries or tuberculous spines and hips. Whether poliomyelitis actually existed is a matter of historical interest only. We are, however, vitally interested in the increase of world wide poliomyelitis during the past several decades.

Underwood,[1] of London, writing in 1784, is generally credited with being the first definitely to describe poliomyelitis. It was not, however, until 1840, when Jacob Heine[1] published his first monograph on the disease that our present conception began. Since that time, the amount of research and literature on the disease has increased yearly until such a tremendous amount of information is at hand that an individual study or evaluation of it is all but impossible. Because of this situation, the International Committee for the Study of Infantile Paralysis was organized in 1928. Backed financially by Jeremiah Milbank, of New York City, this committee was originally composed of Dr. Wm. Park, Dr. Jos. Blake, Dr. Milton Rosenau, Dr. Fred P. Gay, and Dr. Fred Tilney. It was later enlarged to include many others over the United States and abroad. All literature on the subject was reviewed and all investigative work done by the committee and their assistants was finally assembled in book form and published by Williams and Wilkins in October, 1932.

A study of this report reveals that much progress has been made in the study of the disease; that certain theories have been definitely proven and must be accepted; some, as yet, remain unproven; while many others have been definitely disproven and must be rejected.

Among the earlier workers, two names take first rank, namely, Heine and Medin. As previously mentioned, Heine's work in 1840 was very outstanding. A German orthopedist of rare ability, he described the symptoms in such detail that little can be added today, and he concluded that these symptoms pointed to an affection of the central nervous system of an irritative and congestive sort. This work was followed in 1887 by the work of Medin,[1] who, in reporting 44 cases in Sweden, concluded that infantile paralysis is an acute infectious disease, that it may appear epidemically, and that the symptom complex changes according to the portion of the central nervous system most affected. Because of these two notable early contributions, poliomyelitis has been referred to by some writers as Heine-Medin disease.

*Read before the North Dakota State Medical Association, Fargo, May 28, 1934.

The turn of the century marked the real beginning of growth in our knowledge of poliomyelitis. Wickman,[1] Flexner,[2] and scores of other workers have made notable contributions as to the pathological anatomy, causative agent, point of entrance to the body, mode of spread, etc. By 1915, it was well established that the etiological agent is a living virus and that the monkey is a suitable experimental animal in which both the clinical picture and pathological findings of the human disease can be produced. It was also proved that all other animals were unsuitable for this work. Since 1915, neutralization tests have been developed making it possible to prove that not only convalescent serum, but also the serum of probably 90 per cent of all adults contains antibodies capable of neutralizing the virus experimentally. The virus has never been found in the spinal fluid or blood of humans, but has been repeatedly demonstrated not only in the tissues of the central nervous system but also in the tonsils and mucous membranes of the nose and throat, and occasionally in the cervical, inguinal and other lymph glands. Landsteiner et al in 1911,[1] and Thomsen,[1] in 1912, proved that the nasal secretions of a monkey with poliomyelitis could produce the disease in other monkeys. Flexner et al,[3] in 1913, demonstrated that passive human carriers existed, by obtaining virulent virus from the nasal washings of parents of children ill with poliomyelitis. Faber's[4] recent work adds still another chapter to our knowledge. He not only feels that the nose and throat is the portal of entry and egress, but that the idea of a preliminary systemic invasion must be abandoned, that poliomyelitis is, throughout its entire course, primarily an infectious disease of the central nervous system, and follows a fairly well marked main route from the upper olfactory centers to the anterior horns of the cord. He (Faber and Gebhardt) inoculated monkeys by the nasal method and killed them on the 3rd, 4th, 5th, 6th and 7th days, all before paralysis had developed.

On the fourth day virus was detected only in the olfactory bulb. On the fifth day virus was detected in the olfactory bulb, hypothalamus and medulla. On the sixth day virus was detected in the same places, the thalamus and mid-brain. On the seventh day virus was detected for the first time in the spinal cord and ganglia. He concludes that the application of this experimental work to the human is reasonable; and, when considered along with our knowledge of the character and order of development of symptoms and lesions in the human, makes his concept of how the virus enters the body and procedure of spread most plausible. A dying out of the virus in the olfactory bulb could account for the high percentage of immunes, and the abortive cases could be explained by a dying out of the virus before reaching the anterior horn cells.

There are, of course, many problems concerning the epidemiology still unsolved. Just why epidemics are largely confined to the colder climates, and why they usually occur in the northern hemisphere from July to October and in the southern hemisphere from January to April, are among the questions not satisfactorily answered. Enough epidemics have occurred during freezing winter weather to indicate that it is not necessarily the cold that prevents them. Toomey[5] [6] points out that the peak of the incidence curve for poliomyelitis corresponds closely to the peak of the harvest for perishable fruits and vegetables in a given community. He also recently demonstrated that the virus can travel by way of the sympathetic nerves, and produced poliomyelitis in monkeys by injecting the virus directly into a loop of the small bowel that had previously been clamped off. He further showed that a toxic substance was present in the bowel of monkeys suffering from infantile paralysis and that this toxic substance when injected intracerebrally along with the virus increased the virulence of the virus, even though the toxin itself would not produce poliomyelitis. The theory of transmission by flies or other insects has its supporters, and enough small epidemics have been blamed to milk and water that this theory cannot be rejected. A majority of workers at this time believe, however, that it is chiefly spread by droplet infection, by direct contact, or by carriers. It has been shown to follow lines of human travel, epidemics spreading from one large center to another and branching out more slowly to smaller and rural districts. The high percentage of immunes, particularly in urban populations, indicates its widespread distribution.

The symptoms of poliomyelitis are so well known that little need be said regarding them. We all know that they vary tremendously in different individuals and in different epidemics. However, in the light of our present knowledge, a diagnosis must be made before paralysis appears if we are going to be of the greatest help to the patient and the community.

J. E. Gordon[7] states that a diagnosis of preparalytic poliomyelitis consists of a healthy clinical suspicion and a lumbar puncture. Without doubt, many ailments have been incorrectly diagnosed

as infantile paralysis. However, every ill child of the younger age group in our locality during the late summer and early fall months should, at least, be suspected of having poliomyelitis until proved otherwise. While it is needless to say that spinal punctures should not be done promiscuously, nevertheless, a spinal puncture is of the greatest value in making an early diagnosis and should be done as soon as, but not before, definite signs of meningeal irritation appear. These signs include fever, headache, irritability or drowsiness, hyperesthesia and meningismus. A normal spinal fluid at this time almost definitely rules out poliomyelitis. The fluid is under increased pressure and is either clear or of a ground glass appearance. No fibrin web appears; a normal fluid shows a cell count up to 10. In poliomyelitis the count, during the first two weeks, is high, with a low globulin. The count at this time may be as high as 2,000, but it is usually from 50-200 and tends to fall after paralysis develops. As the cell count drops, the globulin rises. During the early hours, the increase of cells is of the neutrophilic type. Later the small lymphocytes are increased. The sugar content is normal to high. Blood counts show a leucocytosis of from 10,000 to 20,000 with an increase in the polymorphonuclear cells.

An early differential diagnosis is often difficult to make. A careful history and physical examination, with a tentative diagnosis at least, cannot be over-emphasized. An epidemic meningitis is usually easy to rule out by physical examination and a cloudy spinal fluid. If organisms cannot be found, a low fluid sugar rules out the disease. Tuberculous meningitis fluid may be much like that of poliomyelitis, but by careful consideration of the history, by tuberculin tests, X-ray examination, etc., this can be ruled out. Epidemic encephalitis gives practically the same spinal fluid findings as infantile paralysis. It is necessary to depend on the history of an epidemic, season of the year, etc.

The prognosis of poliomyelitis must, at all times, be guarded. The mildness or severity of early symptoms is often misleading. A true fatality rate cannot be arrived at because of the large number of mild cases not reported. There is, however, a direct relationship between the spinal fluid cell count and the severity of the disease, severe and fatal cases, usually showing the higher cell counts. Generally speaking, the mortality is higher under one year of age and over ten years of age. The location and progress of paralysis is of the utmost importance in prognosis, practically all fatalities being due to respiratory involvement either from complete paralysis of the muscles of respiration or from pneumonia following a partial paralysis. Not all cases of respiratory paralysis die, however; only a part of the muscles of respiration may be involved, and even with total involvement, recovery may follow a period in the respirator.

As clinicians, we are intensely interested in the treatment. While much is to be desired, nevertheless, progress has been made. Since there are still many uncertainties concerning the epidemiology, we must attempt to meet as many of the possibilities as we can by applying the following prophylactic measures: 1. Quarantine should be observed. 2. Children should avoid fatigue and crowds, especially during epidemics. 3. A healthy nose and throat is desirable. Amoss and Taylor[8] advise against the use of antiseptics in the nose and throat as they may destroy virucidal properties that normally exist. Aycock and Luther[9] showed a higher rate of the disease in children tonsillectomized within 30 days of appearance of the disease. 4. Since the virus has been shown to remain viable in butter, milk, etc., the greatest care should be exercised during epidemics. Milk should be pasteurized or boiled, hands kept clean, and uncooked vegetables carefully washed. 5. Passive immunity of short duration (two to three weeks) may possibly be obtained by injection of pooled serum or whole blood from immune or healthy adults.

General measures of treatment require careful consideration and may be briefly summarized as follows:

1. As in all acute illness, rest, proper diet, fluids, and sedation are indicated.

2. Spinal punctures: Practically all writers agree that spinal punctures for relief of pressure not only increase the patient's comfort, but are followed by striking improvement in the patient's symptoms. There is also reason to believe that less paralysis follows if punctures are done during the first three days of the disease.

3. Complete rest and immobilization of the muscles and joints involved during the acute stage. This usually lasts about three weeks, but may be longer. This cannot be too strongly emphasized, as the tendency of paralysis is to recovery and many of the residual deformities are due to improper management or neglect. Contractures and stretching of muscles must be avoided, and, if necessary to accomplish this, splints, casts or other appliances should be em-

(*Continued on Page 118*)

Semilunar Cartilage Injuries

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OF ALL the serious knee injuries those of the semilunar cartilages are perhaps the ones most frequently overlooked. For this reason a short resumé of the subject may not be untimely.

In order to understand the subject, it is essential to know the anatomy of the joint, especially the cartilage relations and attachments. The two semilunar cartilages are both more or less sigmoid shaped, the external being more circular than the internal. They both lie upon the upper surface of the tibia and are attached laterally to the lateral ligaments of the knee. The attachment of their respective horns differs, however, and this is of very great importance as we shall see. The anterior horn of the internal cartilage is attached to the non-articular area of the tibia in front of the anterior horn of the external cartilage and in front of the anterior crucial ligament. The horn is often somewhat loose anteriorly and is not as firmly united to the internal lateral ligament as farther back. In some cases a bursa separates this part of the cartilage from the internal ligament. For this reason it is easy to conceive why the anterior horn becomes detached so easily and also why cysts sometimes are found near the anterior horn. There is usually an accessory band which connects the anterior horns of both cartilages and another band which connects the anterior horn to the anterior crucial ligament. The posterior horn is attached to the non-articular area between the posterior tibial spine and the posterior crucial ligament. The two horns of the external cartilage attach to the non-articular areas in front and in back of the tibial spine giving off accessory bands at times to the posterior crucial ligament and to the posterior capsule. The anterior horn of the external cartilage is not loosely attached to the capsule as is the internal which is one reason why this cartilage is displaced only one-twelfth as often as the internal. Occasionally the cartilages are found to be complete discs, a reversion to a condition found in lizards.

One of the most common internal derangements of the knee is the ruptured or dislocated semilunar cartilage with and without complications. This injury occurs most frequently to the internal cartilage, being about twelve times as frequent as that of the external. Various types of injury occur to these structures, the most common being the longitudinal fracture which results in the bucket handle type of dislocation. This occurs in about 50 per cent of the cases. Lesions of the anterior third of the cartilage occur in about 30 per cent of the cases; those of the posterior third about 14 per cent; lesions of the middle third about ten per cent, and lesions of the anterior and posterior thirds together about two per cent of the cases. These figures vary, of course, with each individual's series. The dislocations may be of the entire cartilage or of the anterior horn or posterior horn only. The complete or incomplete fracture of the cartilage may be longitudinal, transverse, horizontal, oblique or consist of combined varieties. The fracture may be combined with a dislocation; there may be lesions of both cartilages at the same time, or a semilunar cartilage injury may be associated with other intra-articular pathology such as loose bodies, osteoarthritis, rupture of the crucial ligaments, fracture of the tibial spine, hypertrophied infrapatellar fat pad, etc.

Ruptures and dislocations of the semilunar cartilages occur in many ways, but almost always there is a forcible twist of the knee in partial flexion. This twist may be with the foot fixed upon the ground accompanied by internal or external rotation of the femur or vice versa. Usually there is also some amount of forcible abduction, or adduction of the knee. Just exactly why these motions cause a rupture or dislocation of an internal or external semilunar is not always clear, but the reason for many of these injuries can be solved if we remember our anatomy of the cartilages in relation to the internal and external lateral ligaments of the knee. The internal lateral ligament consists of a long anterior portion and a short posterior portion. The short posterior portion is firmly fixed to the cartilage at its middle while the long anterior portion is loosely connected to the anterior part of the cartilage. A sudden twist of the femur upon a fixed tibia causes the cartilage to tear loose from the anterior part of the internal lateral ligament while the middle part remains attached, thus causing a kink of the cartilage.

The anterior horn enters the joint space and is then caught between the condyle and tibia when the leg is extended, further damaging the cartilage and causing locking of the knee. These forcible twists of the knee may also tear loose other parts or the whole of the cartilage attachments. The force may be great enough to tear it loose from its internal laternal ligament. Sometimes a forcible blow against the side of the knee or a fall upon the flexed knee may also cause a cartilage injury.

The story one obtains of a cartilage injury is not always the same. A twist of the knee occurs as one steps off a curb or upon stepping on a small rock or in a fall, and pain results on the side of the injury. There may be a sensation of something which slipped in the joint or a snap followed by inability to extend the knee fully, by swelling and pain. Often a locking of only a few degrees is present which the patient does not recognize until later when there is a recurrence. Almost always there is a history of synovial effusion which follows the injury. At times the original injury is not severe, being called "only a sprain." Such a "sprain" may really be a fracture of the cartilage without displacement, and hence no locking or much synovial effusion or subsequent muscle spasm. The picture, then, as you see, is not always uniform. The symptoms vary according to whether the internal or external cartilage was injured, whether the anterior or posterior horn was fractured, displaced or both, and whether the entire cartilage was torn loose becoming a bucket handle type. The locking of the knee due to an injured cartilage always means that a part of it has become caught between the condyle and tibia preventing the knee from making its full excursion.

In the recurring type of dislocation of the cartilage the history is characterized by recurring attacks of pain frequently accompanied by synovial effusion. Also, frequent locking and a sensation of something slipping in the joint occurs, often followed by a so-called weak knee. Sometimes, also, the knee "gives way" as the patient says and the knee suddenly flexes from the standing position or while walking. Some of these minor indefinite symptoms are due to a cartilage which is not fractured or dislocated but which is abnormally mobile and yet attached to the internal lateral ligament. This abnormal mobility is caused by a congenital condition or by a gradual stretching of its attachments caused by repeated minor injuries to the internal lateral ligament.

Sir Robert Jones mentions the fact that sometimes pain is referred to the opposite side of the knee from an injured cartilage. Here, however, one must rely more upon the physical findings.

If examined during the acute stage, the knee usually is somewhat swollen about the site of injury and usually accompanied by synovial effusion which varies in amount. When marked, the entire knee becomes enlarged. When minimal, it usually can be detected by obliterating the supra-patellar pouch with pressure when the cystic feel of the fluid can be felt to either side of the patellar ligament. Tenderness is to be found over the injured portion except when it is in the posterior horn when it cannot always be elicited. Crepitus may or may not be present on motion but if a part of the cartilage is very loose, the click can be felt, especially if one puts pressure on the cartilage while the knee is being flexed. At times, the displaced horn can then be pushed back into place with the thumb. X-ray is usually negative as the cartilage shows up poorly and diagnosis as a rule cannot be made even though a locking follows the injury; if one waits for a time following an injury, the secondary tissue swelling and effusion may limit the extension of the joint also. The sudden unlocking of the knee is perhaps more characteristic of a cartilage lesion than the locking and is always accompanied by instant relief. In examining for a locking, one should always examine both knees, as a small degree of limitation of extension may be missed unless this is done.

In examining for a knee injury one should do so by exposing both lower extremities from hips on down and in a good light. The muscles are examined for atrophy, especially the quadriceps, and signs of swelling about the knee noted its location, and whether accompanied by inflammation. The gait is observed for knee function. The knees are then tested for locking or limitation of extension, always comparing the injured knee with the normal. Only in this way will a small degree of locking be evident. Tenderness is sought along the borders of both cartilages from front to back and over the patella and above the patella and posteriorly in the popliteal fossa. These tender spots are examined both in flexion and extension, as they may be missed if only examined in one position. McMurray's test for the internal cartilage injuries is made by palpating the cartilage while the knee is being extended with the foot externally rotated. For the external cartilage injuries he palpates it while the knee is being extended with the foot internally rotated. If the cartilage is injured there is pain and a "click."

A diagnosis depends on a careful history as well as upon a good examination and upon the x-ray. Cartilage injuries usually do not show in an x-ray, but no diagnosis should ever be made without one because of the many things that an x-ray might show. Its negative value is very great, and I will mention the other possibilities to prove this and also for reasons of differential diagnosis. Before doing so, however, I might also mention that arthroscopy is now being developed with an arthroscope, an instrument similar to the urethroscope. The instrument is inserted through a very small incision and the joint examined. I do not advise the use of this measure at this time as it is still in the experimental stage. Another method is the injection of the knee joint with oxygen or some opaque oil such as lipiodol after which x-rays are taken. The value of these procedures I do not consider great in most cases and are not advisable except in special cases.

Other conditions to be differentiated from cartilage injuries are: loose bodies in the knee joint, osteochondritis dissecans, crucial ligament ruptures, internal or lateral ligament injuries, hypertrophy of the infra-patellar fat pad, exostoses of the tibia, patella or femur, Stieda-Pellegrini's disease, chondromalacia of the patella, cystic semilunar cartilage, adhesions within the joint, recurring subluxation of the patella, neoplasms of the bones of the joint and hysterical knee.

Treatment of the Acute Case

By proper treatment a displaced cartilage can often be reduced and allowed to re-attach itself thus resulting in a cure. Not all cases of dislocation re-attach themselves and, also, we know that certain types of injury to the cartilage, such as bad fractures, do not heal under any circumstances. Since we do not always know the exact type of lesion present after an acute injury, it behooves us to give the patient the benefit of any chance he might have for a good result with conservative treatment. By this I mean a reduction of the displaced cartilage by manipulation, a few days rest from weight bearing, the prevention of quadriceps atrophy and intra-articular adhesions. One of the simplest methods of reducing a dislocated cartilage is the method advocated by Sir Robert Jones, which in his own words is as follows: "The knee is flexed and the patient is told that he will be given the order, 'One, two, three, kick.' On the word 'kick' the patient extends the limb as suddenly as he can, and, at the same time, the surgeon rotates the foot inward and pulls." From this time on quadriceps exercises should be given as a weak quadriceps means a weak knee. It may be necessary at times, for internal cartilage lesions, to abduct the knee and press upon the cartilage. The success of the reduction is shown by the ability of the patient to fully and painlessly extend and flex his knee. If this cannot be done, the reduction is not complete and the patient will not get relief. If repeated attempts at reduction fail it may be necessary to operate.

After the successful reduction the patient is kept off the leg for several days to two weeks depending upon the severity of symptoms. During this time he should wear an elastic bandage such as an ace bandage to exert pressure upon the knee and hasten absorption of the effusion. Each day the bandage should be removed and the knee and quadriceps be massaged along with some daily active motion to prevent adhesions and hasten absorption.

When walking is begun, all strain should be guarded against from the lateral ligaments. This may be done with a knee cage which is the surest way to prevent further damage, but in most cases it may be sufficient only to raise the heel on the injured side so as to put the tension on the other side. The patient should also be instructed to walk with the toes inward when the internal cartilage is injured.

Even cases of long duration may be reduced by manipulation. I have in mind an old lady about 60 years old who came to me complaining of an atypical knee condition, the chief complaint being pain over the medial part of the joint. Her symptoms extended over a two year period having begun after a fall upon the knee, and two or three falls since that time. She had pain in the knee for several months since the last fall and had gone to doctors and several irregulars, none of whom helped her. In my examination I found a very prominent internal semilunar cartilage which was very tender. A manipulation was then made being combined with flexion, twisting of the tibia on the knee in both directions and pressure over the cartilage. She obtained instant relief and has had no pain to the present time—about three months after the treatment. Such "magical" cures were often enjoyed by the old time bone-setters, and it is no wonder that their fame spread far and wide.

Clear-cut recurring cases followed by acute symptoms should usually be advised to have operative treatment. The only substitutes for operative treatment are a knee-cage, which necessarily would have to be worn the rest of one's life, and secondly, manipulative treatment com-

bined with muscle exercises. In some cases, due to a weak quadriceps, a manipulative reduction of the dislocation followed by exercises to correct the weak quadriceps produces a cure and hence this conservative treatment should be tried in selected cases. In the majority of recurrent cases, however, a cure is possible only with operation.

No operation should be taken lightly, even a knee operation. It is a major surgical procedure which demands a high degree of technical skill and should be performed only by a surgeon with a large experience upon the knee joint.

A stiff joint may be the result of infection and is a real tragedy. To combat this possibility the knee is prepared usually one or two days before operation. The limb is shaved from groin to ankle, front and back, washed with soap and water, then ether, and then painted with iodine and alcohol. The entire extremity is then covered with sterile towels and bandage. The next day the painting with iodine and alcohol and the bandaging with sterile towels is repeated. On the day of operation it is again repeated on the operating table. No detail is too small to consider, and hence I insist that everyone in the operating room wear a mask over the nose and mouth, preferably a mask that is impervious to air, and one that contains a rubber sheet. A tourniquet is applied to the upper thigh about a piece of felt. The knee is hung over the edge of the table with the surgeon sitting facing it.

Where the diagnosis is quite certain only a small incision is necessary. A short linear incision about 1½ inches long is made to one side of the patella over the anterior horn of the cartilage. Or a small curved incision may be made beginning over the condyle of the femur, crossing the joint space and curving toward the patellar ligament. The skin is incised and the skin knife then discarded. Towels are then clipped on to the skin edges with Mitchel clips and the wound is deepened with a fresh knife, cutting through the aponeurosis and capsule. The synovial sac is then incised, exposing the half of the joint in which is seen the semilunar cartilage. The joint is first examined as well as possible to determine the pathology. The crucial ligaments, infrapatellar fat pad, semilunar cartilage, condyle of the femur, and if possible the patella and the structures of the other side of the joint are examined. The patient's dependent leg is held between the knees of the operator who can exert traction, abduct, adduct, or twist the tibia, thus giving him more room within the joint. If the diagnosis be correct, the anterior horn of the cartilage is grasped with a forceps, and the cartilage is detached all the way around and as far back as possible, being careful not to injure the lateral ligament. I find the tonsil snare very convenient to detach the posterior horn without tearing, cutting or disturbing the other joint structures. The wisest procedure is to remove the entire cartilage regardless of the extent of the pathology. Experienced operators have found that leaving a small portion of cartilage sometimes leads to future trouble, and so the best method is to remove the entire cartilage. The cartilage may appear normal upon first appearance but one should not rest content. One should explore the under surface of the cartilage with a curved probe to detect possible foreign bodies, then grasping the anterior horn and exerting traction upon it. This will frequently reveal a fracture not visible otherwise, and will also reveal an abnormally loose cartilage.

In some doubtful cases, where nothing can be found and yet the symptoms have been classical, it is often wise to consider the cartilage abnormally mobile and remove it completely. Occasionally it is difficult to remove the posterior horn without doing it blindly. In these cases, it is better to make another small curved incision in back of the lateral ligament and finish the operation in plain sight. It should not be necessary to state that the finger should be kept strictly out of the joint, and that all the work should be done with instruments. Before closure one should loosen the tourniquet temporarily and ligate all large bleeders most commonly found in the region of the fat pad, as a subsequent hemarthrosis may ruin the result by the formation of adhesions. The synovia is carefully closed with plain gut size O. The capsule and aponeurosis is closed with interrupted chromic No. 1 single, the subcutaneous fat with a few interrupted plain No. O, and the skin with interrupted dermal. No drains are used in the average case. Where one expects to have much oozing or bleeding, it might be wise to place a drain *to* the synovia only for 24 hours and then remove it, but this is rarely necessary. Drains invite infection and hence are avoided.

Fisher uses a combined curved anterior and posterior incision in some of his cases making the first half of the curved incision in front of the joint, and then, if necessary to detach the posterior horn, he continues it to the back, being extremely careful to avoid cutting the lateral ligament.

Where the diagnosis is not certain, or where

(*Continued on Page 116*)

The Problem of Somatic Health in Physical Activities*

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I HAVE been asked to present for discussion the problem of coaches and others concerned in the development of influences leading to the practice by students of habits in defense of somatic health. Others are to discuss the same topic from the two viewpoints, mental and social health.

Professor Charles W. Kennedy, in his book, "College Athletics," says in part: "Nothing is more important in college sport than that the coaching of teams should be done by men of the right type, men who have adopted the profession seriously and permanently, and who will lift the profession by their influence and example to the level of intelligence and idealism it is capable of maintaining."

This has been said in other words and with other emphasis by school and college presidents, by the parents of boys and by the boys themselves.

Certainly no one on a school or college campus has a greater opportunity for splendid influence. The very nature of his contacts and the character of the problems he helps his boys to solve place him in an important position. It behooves us, therefore, to choose wisely where responsibility rests so heavily.

I am convinced that the coach has his greatest opportunity for wholesome influence on the mental and social life of the boys under him. His influence on the somatic side is limited because there are others directly associated with him in the general supervision of the physical side. The influences conducive to the formation of wholesome habits in defense of somatic health are a divided responsibility between the coach, the physician or medical staff, and the trainer. The coach, due to the nature of his relationships with the boy is in the most strategic position for the proper co-ordination of the staff assigned to his squad. If he is successful in his profession as coach it is not alone because of his technical knowledge of the sport concerned and an ability to teach it, but because he has a sympathetic understanding of the boys' point of view and an ability to mobilize unselfishly and organize those associated with him so that they, too, may hold positions of influence with the boys. It is this problem which interests me and one which I know has not been successfully solved in many institutions. It is not enough for the head of any department to set down rules of relationships and procedures. It is essential that those involved accept them and so conduct themselves that the boys may receive good information and care and above all an attitude toward somatic health habits which carries over into their future lives.

There are certain obstacles which work against proper relationships. When intercollegiate sports and physical training came into being long before the turn of the century two figures were dominant, the coach and the trainer, the same person frequently serving in both capacities. In many instances they were drawn from the ranks of the professional athlete. They were entrusted with the physical well-being of their charges. Many of our finest personalities in sport have this background, and I am one who believes that they have made great contributions to our knowledge of coaching and training. They have had a most wholesome influence on the somatic, mental and social lives of undergraduates. This is evidenced when graduates return to the campus and one of their most valued associations is with old "Doc" this or "Coach" that. These men have touched their lives intimately and wholesomely and they return to renew an old and cherished contact. These colorful figures are still on our fields and in our training rooms and rightfully so.

On the physical side, along with the development of Student Health Services, there has come into the picture another figure in the form of a team physician or college doctor. This has come about as a result of our evolution of thought in regard to responsibility for student health. It is generally conceded today, and in many institutions for many years, that it is not enough for us to be in favor of health and health-giving practices. We must go further and provide ways and means for all to acquire correct knowledge of health habits. The parents of our students are

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showing more and more that they expect medical supervision of their sons and daughters while they are in residence with us and particularly if they are participating in severe body contact games or exhausting sports. This state of affairs has not and should not displace the trainer, but it creates the necessity for an adjustment. For years the trainer has accepted the responsibility for accidents and has carried on treatments of all kinds of injuries without the guidance of trained physicians and surgeons. Only in severe conditions has he called for help. Our present attitude demands that the responsibility shall rest with the trained medical expert. It has been my experience that the common-sense, intuitive trainer, who has for years made a careful study of human nature, has an intimate knowledge of first aid procedures and sound information of physio-therapeutic techniques is an invaluable part of a training program. The essential move and the one hardest to accomplish is this adjustment between trainer and doctor so that prescription treatment is accepted by the former as the proper procedure. Too frequently the trainer tries to push the physician into the background by unethical pronouncements and claims which unfortunately are accepted by the boy.

A second obstacle to a proper relationship between coach, doctor, trainer and the boy is the coach himself. We still have some coaches who believe that the athletic team physician must be some sort of a special being with different methods of treatment. This same coach usually believes that the doctor is working against his and the team's successes. Under such circumstances it is an easy matter to sway the thinking of the boy—just another example of the tremendous influence of the coach. The wise and successful coaches I have the privilege of knowing have exerted their influence to throw the responsibility for the health of team candidates upon the physician in charge, thereby once and for all establishing the proper relationship for which I am pleading. Under such circumstances the playing of boys in games when they should be on the bench, or in the sick bed, is safely guarded against. We have enough natural hazards in our vigorous sports without adding unnatural ones. The physician in charge must play his rôle. The family physician in his comings and goings in his community must be a psychologist, he must study and understand the feelings and emotions of his people and act accordingly. Similarly, the team physician must first of all understand and be in harmony with the ambitions of the boys. He should be familiar with sports and be ready at all times to meet athletes on common grounds of understanding about them. He should realize that he is dealing with strong healthy youths who are more than anxious to play the game. Apathy on his part is fatal to his influence. Regular, frequent examination and treatment of injuries and ailments, however, is conclusive evidence that he is in tune with the boy's ambition to return to service. In other words, he has established himself in a position of leadership in defense of somatic health, a leadership which makes his word respected and obeyed.

There is one other point which I should like to present for discussion. What is our responsibility in regard to ascertaining the physical fitness of team candidates? In the University of Pennsylvania we have assumed that a boy presenting himself for team practice should in all cases present to the coach a certificate of his physical fitness to proceed. This is not only a protection to the boy, but it relieves the coach of a feeling of responsibility which he should not be asked to assume. A boy who reports for two or three sports during a school year receives an examination at the beginning of each sport period. A boy absent from any activity for which he is given physical education credit (this includes athletic squad work) is required to be examined before returning to class or activity. This is hard to enforce in all cases.

The examinations given on all occasions take into consideration the original findings of his entering physical examination, the record of which is available at all times in his health service folder. Each examination reviews the period since the previous check-up as to illnesses and injuries.

We are going one step further in our study of athletic boys. We have requested all varsity squad men in all sports to report to the Health Service for X-ray examinations of the chest. This is a precautionary measure against using boys on our teams who may be in the incipient stages of tuberculosis, otherwise undetectable. The response to this request has been very good, but not one hundred per cent. It is getting better year by year. Then, too, we are conducting an investigation among boys who have finished, or are approaching the end of their college athletic careers. Seniors in different sports have been given electrocardiographic and fluoroscopic examinations of the heart to establish the fact that athletic participation has not caused an enlargement or damage. The boys are informed of the findings.

All cases of injury or illness in all physical activities are referred to our Health Service for study. All athletic injuries are recorded as such on their charts for future reference together with other information pertaining to findings and treatment. All this is an effort to create in the minds of our undergraduates attitudes which shall stand in defense of somatic health now and in the future. Basically the success of such influences and leadership is dependent upon the constant vigilance of our Health Service staff and the helpful co-operative influence of the coaches, trainers and teachers of our athletic sports groups and physical activities classes. I repeat that the rôle of the coach or teacher is most important in maintaining this constant leadership.

THE COACHES' PROBLEMS OF LEADERSHIP IN THE FORMATION OF MENTAL HEALTH HABITS*

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MY DISCUSSION today must be brief. It will be limited to a discussion of the coaches' problems of mental health leadership. There is not time for a discussion of the more fundamental problems of mental health leadership in the play lives of little children and of pre-adolescent children, and of high school boys and girls, nor of mental health leadership in other phases of college physical education activity.

His students come to the athletic coach because they want to. They come to him with high pressure interest and a high voltage of enthusiasm. They bring vigorous youthful emotions. These young men are as a rule mentally dynamic. The problem of the coach in relation to the mental health behavior of his team members is therefore concerned with guiding and conserving enthusiasms and controlling and adjusting dynamic emotions for the achievement and defense of wholesome, vigorous mental health behaviors with all the individual differences involved for every member of his squad, whatever it be—baseball, basketball, football, track, or some other sport.

In his efforts to produce, improve, maintain, defend, or restore the mental health of the athlete, the coach is confronted with a number of opportunities and a good many obstacles. The procedures necessary for the satisfactory solution of his problems vary with each individual student for whom he is responsible. I shall attempt a classification of some of his problems, urging you to note that I make no claim to completeness of classification or finality of analysis.

First, there are the problems of assisting the athletically inexperienced boy—the "unprivileged" potential athlete—to develop and maintain mental behaviors that bring him satisfactions and protect him from emotional conflict. The potential athlete who reaches college unheralded usually brings the coach a less difficult set of mental health behaviors than those brought by the high school star. Nevertheless, he is subject to a set of emotional stresses that are more dangerous to his mental health, present and future, than is the non-athletic boy beginning his college or university career.

Second, there is the boy who does his very best and fails to make the team. He is left on the bench. He is frustrated, disappointed, distressed, and harassed by a feeling that he is inferior; or he may think he has not been treated fairly. In any of these and other attendant reactions, he presents his coach with a vivid and important problem of damaged mental health that calls for a careful and understanding solution. Every boy is different from every other boy. The coach must measure individual differences in his leadership of boys toward sound mental health. Many times the coach will need the help of others, and not infrequently his boys reach a stage of mental disturbances that belong to the psychiatrist.

Third, there are the problems of mental health that are brought to the coach by the high school or prep school star athlete when he enters college. He has been adored by the home town people, lauded by the home town papers, feted and eulogized by the service clubs, chambers of commerce, boards of trade, and similar organizations in the home town. Some of them have won state, inter-state, and even national prominence with wide newspaper and radio and other general public attention. Some of these boys have been offered inducements by unofficial—or even official—representatives of various colleges and universities. Some have accepted the highest bidder or the most advantageous offer. Some of them enter college with a distorted evaluation of their importance to the institution and to society.

Some of these star athletes are wholesome, wide-eyed, enthusiastic boys, mentally adjusted, and emotionally balanced. Their mental health behaviors are good. They bring the coach the

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problems of maintenance and defense of those wholesome mental behaviors under the new and extraordinary mental stresses of the beginning of college life.

Another group of famous high school athletes arrives at college afraid of the demands of the new situation. They know what the home town expects of them and are fearful that they may not "make good." Every individual in this group presents his own problem of mental health—or several of them—that the experienced coach may recognize and solve. He frequently needs competent help. Sometimes he needs a great deal of help if he is to succeed in safeguarding the mental health of the boy.

Some of these freshman stars are harassed by the fear that they cannot carry the academic load and the training load at the same time. Others are harassed by the worries of a combination of the academic load, the training load, and the burden of earning their own way, all of which must be successfully carried in order to "make a team." Failure means disgrace at home and abroad. Members of this group easily become seriously sick mentally. They sometimes require the services of the psychiatrist for professional treatment and for restoration to normal mindedness.

There is the conscientious boy whose mother or father, or both, attempt at long range to regulate his campus life as a student, an athlete, and as a member of society. In these cases the problems of mental hygiene presented to the coach are complicated by the fact that the mental health of one or both parents may need treatment as much as, or even more than, the boy needs leadership.

The cocksure high school star brings the college coach another group of mental behaviors that may require a great deal of special attention if the boy is to become a mentally healthy member of society, and incidentally a useful athlete.

The success of the leadership of the coach for the practice of mental health habits by students engaged in athletic activity for which he is responsible is sometimes made more difficult by reason of alumni influences.

I am convinced that the majority of the alumni of every college and university are solidly behind the ideals of a coach leadership that promotes the formation of physical, mental, and social habits of healthful living by the members of their college or university teams. Most of this support is silent. Unfortunately, some of the most active of those who express what should be a precious alumni concern for athletic affairs constitute a source of emotional conflict to the athlete and to his coach. The influential alumnus who has a favorite on the team and finds fault with the policy of the coach because he thinks his favorite is neglected, and makes his criticism known to the student or the students on the squad, brings the coach a problem in which the hazard to the mental health of the player or players involved may become very real. These influences interfere with the leadership of coaches, eventuating in anxiety, depression, and dissatisfaction of players. It is mild enough to state that problems from these sources magnify the difficulties of successful health leadership by the coach. The wealthy gambler, of whom we hear occasionally, who invests in the college education of athletes in order to produce winning teams for betting purposes is probably a similar source of mental harassment to the players he stakes and to the coach who tries to produce with them a wholesome team psychology.

Another source of problems that complicate the leadership of the coach in the improvement, maintenance, and defense of the mental health of the members of his squad is furnished by certain of the less understanding or more thoughtless sports writers. I have never known a sports writer who was not fundamentally more concerned with the welfare of the boy than with his column in the paper. I know of a number of situations in which sports writers have, with deliberate unanimity of intention, omitted all publicity in order to avoid misrepresentation and consequent undeserved injury to the reputation of a college athlete. But the habit of extravagant glorification or of severe condemnation of star college athletes by careless sports writers has brought coaches everywhere problems of mental depression and exaggerated conceit among their team members that must be wisely solved in each case, if the boy involved is to be saved from the damages of mental suffering and helped to the achievement of mental health.

My inadequate presentation of some of the problems that the coach must solve if he is to be a successful leader of students in the formation and practice of wholesome mental health habits is sufficient to make it clear that the coach faces a remarkable opportunity and carries a tremendous and hazardous responsibility. It further emphasizes the fact that no coach can alone lead his boys to the formation of wise mental health habits. His success as a leader of young men in the formation of wholesome habits of mental

life depends on his alert use of highly competent associates. He must be a wise, understanding, and fatherly friend to his boys. He must be the first to detect their needs for mental, physical, or social health attention. He must know where and how to procure the trusted medical adviser whose essential professional aid is so often secured too late. The success of the leadership of the athletic coach in the protection and improvement and defense of the mental health of the members of his squad and his success in influencing his boys to the formation of permanent wholesome emotional behaviors depend on his having intimately associated with him and his staff the resources of, or resources equivalent to, a highly competent student health service, a campus public health service, and a hospital service with a staff of superior physicians. Every physician on the staff of a student health service, and every physician who deals privately with students should be understanding and be professionally alert to the mental health problems of college students. Every psychiatrist who works with students should be professionally and temperamentally equipped to recognize the signs and symptoms of approaching mental disease among college students. These physicians should be available to help the coach and ready when his problems become problems requiring professional medical solution to take over his responsibility as soon as that responsibility belongs to them.

The success of the coach in this sort of leadership depends also upon his having associated with him competent teachers of hygiene, a wise dean, and an understanding president. Every teacher of hygiene should be a teacher of mental hygiene as an essential part of his subject. Every dean and every president, whether he speaks the language or not, must face problems of mental health in the performance of his duties with students. There is no escape. The coach needs also a loyal student body, a co-operative alumni association, and easy access to influential sports writers.

THE HYGIENE OF PHYSICAL EDUCATION ACTIVITIES*

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THE program that we are about to present has been prepared by the Standing Committee on "The Hygiene of Physical Education Activities. The unity or wholeness of our plans for the treatment of the special subject of this afternoon leads me to stress very concisely, as a preliminary, certain definitions that emphasize this unity. Our program subject as stated is "Problems of Successful Leadership for the Practice of Somatic, Mental, and Social Health by Student Groups Engaged in the Recreations, Sports, and Athletic Activities Characteristic of Physical Educational Programs."

My definitions are concerned, therefore, with the meanings of the words hygiene, somatic, mental and social health; and physical educational activities. My definitions must necessarily be brief. They may, therefore be incomplete.

First: Hygiene may be defined as the principles and practices that ultimately determine and regulate the production, improvement, maintenance, and defense of health.

Second: Health is always a somatic, mental, and social state of well being. These qualities of health are inseparable in any consideration of health as a whole. Somatic health is a quality of the structure and function of the normal body. It is characterized by normal growth, normal development, and normal maintenance. A lack of somatic health is a product of organic injury and a consequent disturbance of function. Mental health is a quality of normal mind exhibiting normal dynamic psychology, mental harmony including emotional adjustment. Defective mental health is shown by disturbances of normal psychology produced chiefly by emotional conflict and characterized often by worry, anxiety, fear, and other lack of mental control. Social Health is a product of wholesome social personality, characterized by sociability, co-operation, and sportsmanlike conduct as contrasted with asocial and anti-social behaviors.

Third: The physical education activities involved in our subject include the play of little children, the games of pre-adolescent children, and the sports and athletics of youth. We are especially concerned here with the hygiene of sports and athletics at the college level, even though the problems of one age period are determined by the problems of the preceding age periods, particularly by those of early childhood.

The subject of our discussion today makes us lean heavily on the health leadership of the college and university athletic coach. His is the leadership that gives him a teaching opportunity and a teaching power greater than that of all other college teachers. The program of the popular coach determines the formation and practice of habits that produce, improve, maintain, injure, or defend the somatic, mental, and social health

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of the adoring athlete under his instruction; the applauding student body; the eager mimicking high school boy, longing some day himself to be an athlete; and even the hero worshipping press, the radio, and the movie.

Every athletic coach, whether he thinks with the vocabulary of hygiene or with some other, is concerned with the production, improvement, maintenance, and defense of somatic health to a degree that will give him a team of power, speed, and endurance. He is concerned with the habits of nutrition, excretion, drinking of water, physical activity, relaxation, rest, and sleep of every one of his boys. He is concerned with the prevention and care of their injuries and with their illness.

Every athletic coach is concerned with the production, improvement, maintenance, and defense of the enthusiasm, mental satisfaction, and emotional adjustment that constitute the mental health of every individual boy on his squad.

Every athletic coach is concerned with the production, improvement, maintenance, and defense of the social personality, the social health, of every member of his team, so that he may secure a total integrating social group psychology that will dominate his squad as a whole. He must have team work, he must have loyalty, and he must have willing obedience to his program of training and competition.

The primary purpose of the coach is to direct, guide, and manage physical, mental and social behaviors of athletes in training and in competition, and even between seasons of training and competition. He is not primarily concerned with teaching principles. His concern is with practices —with the behaviors of individuals associated in a group. This is one of the outstanding differences between the teaching problems of the coach and the teaching problems of his confreres in other phases of college and university instruction. They deal with principles; he deals with actual practices. His students come to him with a driving interest. They want to be led. He has something that they want. They follow his leadership with enthusiasm.

The leadership of the coach may achieve his objectives in athletic victories and defeats and have a wholesome influence on the permanent health habits of his boys—or he may lead them to the formation of bad and even vicious habits—somatic, mental and social.

Dean Mercer will discuss these problems from the viewpoint of somatic health; I from that of mental health, and Dr. McPhee, social health.

A WHOLESOME SOCIAL PERSONALITY IN PHYSICAL ACTIVITIES*

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WHEN the Creator endowed man with the power to make use of the experience of others, He started him on a long chain of events that was destined to lead him from a very simple form of existence to one of an intricate nature. As one individual discovered, or invented something which eased the struggle for existence, another used it as a basis for discovering or developing better things. Life became a process of living up to or bettering the Joneses. As time went on these discoveries and inventions multiplied, divided and branched until man's environment became very complex. His attitudes and behaviors in this changing environment also were modified until we see his simple conduct becoming as complex as the environment in which he lived. So it is today that the term personality embodies a complex group of attitudes which man displays in response to his environment and others in it. Nor is it absolutely fixed. Have you ever stopped to realize how many different impressions a man will make upon the members of a group? Each member has a little different background upon which to base his judgment and the man is catalogued accordingly. I think one is justified in calling this a form of relativity and certainly it is as complex. How then can we form any standard to measure the personality if one member of a group holds an opinion at the zenith and another at the nadir?

I frankly admit that personality does not lend itself to any hard and fast rule, nor is it capable of mathematical measurement. However, by experience, we have learned that there are certain qualities which add to the progress of a group and others which retard or detract. When the qualities which add to the progress of the group are in preponderance, the personality may be said to be good or wholesome. Now then, is there any rule or standard which can be offered as a guide to developing the personality which adds to the group? I believe the Golden Rule, "to do unto others as you would have them do unto you," supplies the need. This rule in its application brings up many questions and interpretations but I wish to ask the question: In your daily tasks what is the one thing that you would ask of the other fellow in his relationship toward you? I believe there is enough good in all of us to desire that

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the other fellow play square. We don't mind if he doesn't like us, but we are roiled if he double-crosses us, resorts to trickery and unfair means of gaining a point.

Also, there is enough bad in most of us to take advantage of the other fellow. If you don't believe that statement glance through the files of your newspapers and see how many men of high repute have yielded to the temptation of graft and embezzlement.

If you follow the Golden Rule and expect others to play square with you, you in turn must play square with them. You cannot play square with a group unless you mix and co-operate with them and are loyal to their aims. You may not care for certain individuals, but unless you step in and carry your share of the burden toward the ultimate end you are bound to retard the progress of the group. I should like to emphasize in this paper then that the basic qualities of a healthy personality are mixing, co-operation and loyalty. A person displaying these qualities can move along with the group and promote its objects. A personality that possesses in addition a sense of humor, friendliness, initiative and self-confidence is raised to a higher plane.

With this as a background, let us transfer our thoughts to the field of physical education and see if it has the possibilities of developing and maintaining these qualities, and whether in fact it does so.

Most of our colleges offer three *programs:* Formal gymnastics, intramural and intercollegiate.

Formal gymnastics, to my way of thinking, does not rank near the top in its potentialities as a developer of the personality save in two important respects. The first is health, a factor which is frequently overlooked. Many writers have said that there are three factors in the development of an individual's personality: Heredity, environment and activity. This is probably true, but I have often heard mothers say, "I know there is something wrong with my child because he is so crabby and out of sorts." I believe they call our attention to a fourth factor of prime importance in the development and maintenance of the personality—namely, health. Prolonged illness tends to change not only the outlook of the individual, but his attitudes and his actions. Nor does it always need to be organic disease. Some of the most difficult problems of adjustment we have at Princeton are presented by boys who have been limited in their activities because of a functional murmur or a skip beat. Ages back, there was a theory that personality was due to substances like hormones floating in the blood stream. This theory became obsolete, but the other day I read an account of a young lady who instigated divorce proceedings because the affable disposition of her husband had changed to that of a dyspeptic wildcat. His love of her drove him to a doctor who removed the offending thyroid. With the restoration of his former disposition came harmonious relations and the divorce courts lost a suit.

Regular exercise tends to maintain health and body development and thus contributes to personality.

The second potential contribution is self-confidence. The proper administration of the formal program will offer tasks to the individual which are within his realm of accomplishment and which progress in degree of difficulty. The mastery of these tasks instills confidence. Naturally self-confidence is not a quality that exists by itself. It carries with it a buoyancy of spirit, a sense of well-being, a boldness of attack. This stresses a point which I hope you fully appreciate and that is the extreme complexity of the personality and the difficulty in any attempt to analyze it.

However, I believe the personality is essentially tied up with the group and hence the group environment offers the best means for its development. Formal gymnastics is more or less an individual function and we admit it by employing class games for our group contacts. It is not my wish to belittle the formal gymnastics program because I feel it has a definite value, but its contribution to personality development is very elementary because it is essentially individualistic and does not have the appeal. A few students can see the aim, but the majority, unless under an inspiring instructor, class it as dull, uninteresting and boring.

The group games as represented by our intramural and intercollegiate programs have an aim outside of the individual, an objective which is readily seen. This objective has an appeal and captivates the interest of the individual to the point where he has the desire to represent his unit. Interest and desire are basic in learning. What will be learned depends upon the presentation of the material and in this respect I believe that intercollegiate games are superior to intramural games for personality development. The intramural unit selects its leader from among its own members. Usually he is a chap with some outstanding qualities of leadership, but not infrequently it is a clique or salving affair or merited

because of ability to play the particular game. At all events, his maturity is in about the same stage of development as the group which he leads.

In intercollegiate games, the coach is the leader. He is selected by a mature group representing the university's interests. They should seek a coach who knows his subject and how to teach it, who has an unquestionable character, and who has a personality that commands respect and admiration. Having selected such a person they should give him the reins and keep hands off and allow no interference from the outside. Such a man will develop the best team possible from the material at hand and he will handle the young manhood in his charge in an honorable manner that will be conducive to the development of healthy personalities.

In the latter phase the coach has unlimited possibilities from the teaching of fundamentals to the end results of the game. There are numerous little tricks that can be taught with fundamentals that take unfair advantage of the opponents. They are taught in the spirit that they are all right provided the officials do not see them. If the lad accepts and practices these tricks he is laying the basis for taking unfair advantages in life. On one occasion a former coach came back to his alma mater to assist in the preparations for a big game. He started in by teaching such tricks to the lineman. These men had been taught their fundamentals by the head coach who was a man of character. They had imbibed his spirit of fair play, revolted against the questionable methods and walked off the field until the old grad was removed.

Putting the team together calls for fair play. It should be represented by the men who show the best ability in their respective positions plus the willingness to mix and co-operate for the welfare of the team. Besides they should express their loyalty by abiding by the training measures of the group. "A lad who is not named on the first string on this basis is more apt to take it like a man expressing endeavor, courage and self-restraint. He respects the fair attitude of his coach and learns an important lesson—trusting the judgment of those who have proved themselves." If the selection is on any other basis, such as favoritism, personal animosity, captaincy or previous performance, the ground work will be laid in some, who are not named, for resentment and its unwholesome attitudes. Speaking of favoritism, it is not a wise plan for the coach to lionize one of his outstanding men in the presence of his squad. Such action created a most unwholesome attitude in the squad of one coach and contributed much toward his downfall because the group felt like "letting George do it."

The psychological preparation for a game affords ample opportunity to the coach to preserve the personality. In a large university—not Princeton—every thing was moving along smoothly and the coach was displaying an affable disposition until the week of the big game. He suddenly became extremely stern and clamped down on all mirth, squelched expressions of humor, stamped on relaxation of thought off and on the field. The result was a team without a soul, a nervous group of boys who could not co-operate, a showing below par, a first defeat. How much better would have been a normal hard practice, carefully analyzing the offense and defense of the opponents and working together to set up a defense and offense to cope with it. Why squelch an inoffensive sense of humor, the greatest attribute one can have for getting along with others? If a certain line coach of my acquaintance had that quality, he would without doubt be numbered among the leaders in his field. He has everything else but he is all hard work and gathers as much friendly co-operation from his men as the old, hard-boiled top-sergeant.

The play of the game sees the squad putting to test all it has learned—mixing, co-operation and loyalty are at their peak. Self-confidence, initiative, sense of humor and the rest convert it from routine to play. Naturally with the emotions as high as they are the lads make mistakes both in play and in conduct. The wise, observing coach notes the errors and brings them to the boy's attention in a manner that assists him to use his mistakes as "pivots to greater triumphs." If the coach criticizes harshly or removes the lad from the game and then ignores him, an exceptional opportunity has slipped by.

The aftermath of games affords splendid opportunities for personality development by the coach. Is his squad a considerate winner and what is of greater importance, is it a gracious loser? Defeat is the optimum light in which a coach can study the personalities that are developing under his tutelage.

"The man worthwhile is the man who can smile
When everything goes dead wrong."

The coach holds the key. The opinion of the public, the glory of the school have a bearing, but a respected coach is the lad's closest concern. "How is he taking it?" is in the foreground of the boy's mind. If he takes it graciously, his charges will follow suit and his words and his

actions will reinstate the confidence and spirit that is needed to carry on.

The primary aim of education is to train youth for future citizenship. Athletics have been accepted as a part of the educational program and should, therefore, be expected to contribute to the same aim. The healthy personality represents the type that will succeed most completely. Intercollegiate games offer a golden opportunity to promote and preserve the healthy personality. Therefore, it should be incumbent upon the authorities to make certain that optimum environment for personality development exists in connection with the athletic program.

I have spoken about the importance of the type of coach. As things exist today, in spite of the Carnegie report, we cannot hold the coach wholly responsible. His work represents his means of a livelihood. If he is to be judged entirely by games won and games lost, regardless of the fact that he will be meeting teams holding advantages both fair and unfair, then an unnecessary burden is placed upon him, the type of burden that strains the personality, the very thing relied upon to give healthy attitudes to the youths. Victory and defeat can contribute to the goal so why insist upon an overwhelming majority of the one?

The reasons are finances and demands of the alumni. If these are to take first rank, then the true objective is side-tracked and the fundamental reason for having athletics in the educational program is lost sight of. If victory is primary, remember there is enough bad in most of us to take advantage of the other fellow. That is why the coach in whom confidence has been placed should be given the reins and outside interference withheld. If he is the type outlined above he will win a fair proportion of the games.

Outside influence comes in another way that is far more insidious. Witness a star athlete on a high school team who this summer was offered $70.00 a month by an alumnus of one university. Representatives of two more schools put in their bids. A local alumnus of one told a representative of the other that he was prepared to double any offer made to have the lad attend his university. The object of this bartering was an amiable lad who had reached the point of making a very important decision, namely, "What college will give me the best training for life?" To complicate the picture, he could use the money. An unnecessary burden was placed upon that chap. He was completely bewildered. He had to wrestle with the problem as to whether he would accept the most handsome offer and convert his game into a job, or select the school of his choice and play the game for the love of it as he had done. In the former case, the game would represent a necessity and in the latter a desire.

Again, two pals had selected a university, but one was high-pressured by a group of alumni of another school to enter there, solely because of his athletic ability. The result was that he was totally unhappy away from his friend and could not put his heart into his play. His performance dropped off and he was relegated to the freshmen scrubs. His confidence waned and he finally quit to enter the school of his original choice. In the meantime, he had developed a temperament that did not succeed even there, so he dropped the year planning to re-enter the first school with a fresh start.

I might go on and enlarge upon how practices similar to those just cited produce the exalted self; and how cliques foster a jealous and selfish spirit, and the effect upon the outside world of sending healthy personalities into it, but there is a limit.

Treating a subject of this type in the time allotted curtails not only the full consideration of each point, but also the extent to which the field can be covered. I have tried, therefore, to confine this discussion to the opportunities of the coach for leadership in this problem of developing and maintaining the wholesome personality, in the field of sports. I have stressed the importance of selecting the right type of man for this work and of giving him unlimited freedom in his task of cultivating our youth in its growth toward citizenship.

DISCUSSION OF PAPERS BY STOREY, MERCER AND McPHEE

Jane North Baldwin, M.D.
VASSAR COLLEGE

Dr. Storey has outlined the problems to be met by the college coach. Similar problems occur in the smaller colleges and to a greater or less extent, with interclass teams. The crux of the matter, in the opinion of the college health service, is first, the recognition of the emotional state of the student, and second, the personal interest and co-operation shown by coach, fellow students, faculty, residents or deans.

The awkward, uncoordinated, shy girl or boy, untrained in athletics must be gradually led and trained to skill in some athletic sports. The discouragement and depression which follow failure along one line may often be met by the transference to another field of activity where success

can be attained and satisfaction and happiness secured. Co-operation between physical directors and members of the health service may be reached by meetings of the departments as a whole, when not too large, or committees from each, where the mental health as well as the physical well-being of individual students should be reported and studied. This co-operation should extend to members of the student body, who, by personal interest, will offer fellowship and encouragement, to the teachers, residents, or deans who should be asked to observe student attitudes, make social contacts through which a student's confidence is often obtained.

The conceited, overbearing individual, a star in preparatory school, is usually pretty well handled by the students themselves but sometimes such attitudes only mask inner tensions and failure may precipitate a real depression when the psychiatrist is needed. Unsportsmanlike behavior may have its origin in the over-protection of a doting mother or the over-indulgence of a fond father—or with divided families, divorced parents. Such students become real personality problems and it does not need the psychoanalyst to interpret the students' personality or help them to help themselves. In very rare selected cases the psychoanalyst may be indicated. Colleges and universities have for many years protected and promoted the physical health of the student; the mental health surely is no less important. The mortality is sometimes quite as high. Individualizing the students, the genuine interest of all concerned, the trained psychiatrist when indicated can do much toward establishing mental health.

DISCUSSION OF PAPERS BY STOREY, MERCER AND McPHEE

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UNIVERSITY OF PENNSYLVANIA

There are a few things that Dr. Mercer has mentioned which I should like to stress. Dr. Mercer spoke of our requirement at Pennsylvania of a thorough examination at the HEALTH SERVICE for members of the various intramural and varsity athletic squads. This is primarily for the purpose of safeguarding the boy and relieving the coach of a responsibility which he should not be asked to assume. While gross disabilities are usually known through examinations by the family physician or at the time of entrance to the University, it sometimes happens that a condition has developed subsequent to the last examination or a defect which would not prevent participation in one sport might make it unwise for the boy to indulge in another. For example, during the past three years early pulmonary tuberculosis has been detected in four members of varsity squads. These boys were unaware that anything was seriously wrong and at the time the trouble was noted were actively participating in crew, football, or tennis. In none of these boys was the clinical evidence sufficient for a diagnosis, but the X-ray showed unmistakable lesions. In the early days of our health service a member of the waterpolo team was found to have serious organic heart disease. It was well compensated, but we felt that keeping him from further participation in so strenuous a sport possibly saved him from a serious catastrophe and the coach from embarrassment for which he could not have been to blame. Curiously enough boys who have been warned by the family doctor or by the preparatory school physician against indulging in such sports as crew and football not infrequently report for examination for those sports either in the hope that their trouble has cleared up, or, as I sometimes think, to try us out. This fall a student who had transferred from another university reported for crew and was referred to the health service for examination. He had rheumatic aortic regurgitation with considerable hypertrophy. He admitted that the doctor at the other college had forbidden him to row, but said that, as he felt all right, he thought it would do no harm to try here.

Then there is the other side of the picture. We find a great many students with murmurs, some of whom have been kept out of athletics, who after careful study are found to have no significant heart trouble or whose lesion is so slight that participation in some sport is not only harmless but advisable. Since November 1932 about 400 of 3,500 students examined on entering have been studied at the health service because of some cardiac abnormality. Of entering students, 3,598 or about ten per cent had murmurs. Of these one hundred and fifteen or 32 per cent had evidence of heart disease. Nine or two and one-half per cent were in a class where participation in any sport was considered unwise; 79 or 22 per cent were allowed to engage in non-competitive athletics or in some selected sport. The rest were not restricted, but were given appointments for subsequent examinations, the interval varying with the individual case. The remainder were informed that they had no evidence of heart trouble but were told that semi-annual or annual examinations were to be given while they remained

at the University as a precautionary measure. When these boys graduate we urge them to continue the habit of periodic health examinations. I think it is most important that the students feel that the health service examinations are for the purpose of helping them to succeed in athletics, to help them to choose the sport for which they are physically fitted, and for no other reason. It is most satisfying to see a cheerful smile replace the drawn look of apprehension on a student's face when he or she is told on the completion of our examination that the heart is all right. This is especially true of those whose activities have been restricted solely on account of a systolic murmur.

Dr. Mercer has mentioned our cardiac studies of athletes about to terminate their college careers. There has been so much said and so little known about the so-called "athletic heart" that we have thought it worthwhile to examine our senior athletes. This is not done solely, or even chiefly, as research. We believe that sooner or later the young men will apply for insurance or take an examination for some other reason and that our records may then be of some value to them. Furthermore, most of the boys have heard of "athlete's heart," and possibly think of it as a disease like "athlete's foot." We try to explain what is usually meant by the term, to allay any apprehension which they may feel, to urge them to continue their habits of taking regular exercise, and to have periodic check-ups of their physical condition, and we tell them that a full record of the cardiac examination will be on file and available should future reference to it be desired.

I should like to emphasize one more thing, that is the stressing by the health service physician of the need for taking care of the minor injury or the minor infection, especially the latter. Each year we have had fewer cases of neglected colds developing into more serious conditions. Many students come in saying, "I only have a little sore throat," or " a little cold in the head," but fewer say "I have a cough that has hung on for the last two or three weeks." We have had relatively few cases of bronchopneumonia, or other complications developing in the several hundred cases of influenza or acute respiratory infections that have been seen in the dispensary or admitted to the infirmary during the past few years, or among those treated by their family physicians at home, and we feel that many cases of severe sinusitis, otitis media, etc., may be prevented by early recourse to the health service.

SEMILUNAR CARTILAGE INJURIES

(*Continued from Page 105*)

the case is a complicated one, a larger incision is necessary to permit complete examination of the entire joint. Such an incision is the long medial or lateral patellar incision beginning at the upper limit of the suprapatellar pouch and extending it down to opposite the patellar ligament. The entire patella with its ligament and part of the quadriceps muscle can then be pushed to one side and the entire joint examined. The under side of the patella also can be examined for a chondromalacia which is difficult to do through a small incision. In my opinion this incision is much better than the split patellar incision, being easier, more anatomically correct, and resulting in a more perfect subsequent union. Cartilage heals poorly if at all and the incised patellar cartilage is apt to remain rough and cause subsequent trouble.

It is better not to splint the knee too securely; a pillow splint serves very well for several days to keep the knee quiet until the post-operative reaction is over. From the first day it is well to let the patient contract his quadriceps with the leg in the extended position, thus preventing atrophy. Small active motions are begun after about five or seven days and increased in range and frequency daily. The patient can be up on crutches after the seventh day and begin a little weight bearing, increasing the amount daily. The stitches are removed on the tenth day. Synovial effusion usually disappears spontaneously with active motion and with an elastic bandage. Massage of the quadriceps is continued for several days and also active exercises to develop the muscle. This exercise must be continued for several weeks until the muscle is as large and strong as the other one. Convalescence should be complete in three to four months. The results of semilunar cartilage removal have been uniformly good, being excellent in 85 to 90 per cent of large series of cases.

In conclusion, I should like to emphasize again the important points:

1. Diagnosis can usually be made from the pain, locking and synovial effusion.

2. Conservative treatment should be tried for the original lesion. It consists of reduction, a firm elastic bandage, rest for two weeks and avoiding twists of the knee for several weeks.

3. Operative treatment should consist of complete removal of the offending cartilage under aseptic conditions by an experienced surgeon with a thorough knowledge of knee pathology.

Intra-articular Temperatures Produced by Artificial Fever (Preliminary Study on a Tuberculous Knee)

Charles K. Petter, M.D.*
Oak Terrace, Minn.

SEVERAL years ago, while investigating various methods of treating tuberculous perirectal abscesses, the author was impressed by the exceptionally good results obtained when patients were treated post-operatively with hot sitz baths. Recently, much work has been done by others with various forms of fever therapy in syphilis, arthritis and other diseases, the observers reporting favorable results. With these observations in mind, I began to use artificial fever therapy in tuberculous lesions of bones and joints.

It is well known that submerging an extremity a large part, or all of the body in hot water, raises the body temperature. This simple method requires little equipment and simulates the sitz baths which prompted our first observations on the effects of heat. I have not been able to find any references in the literature of the past few years of intra-articular temperatures.

This report deals entirely with the method, apparatus used, and observations on recorded temperatures in a tuberculous knee.

To record the intra-articular temperature, a thermocouple was constructed, having its active segment in the tip of a twenty gauge needle which could be inserted into the center of a joint. Figure 1 shows the thermocouple set up.

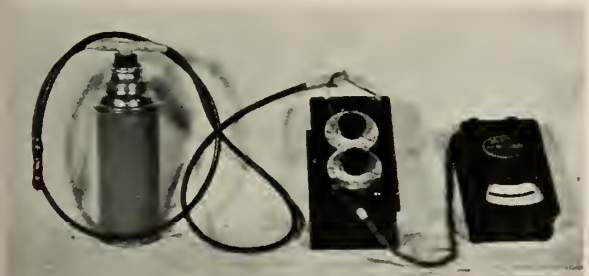


FIGURE I
Thermocouple in 20 gauge needle shown at left, with resistance and galvanometer at right.

Before the patient was submerged and after infiltration, (anesthesia with novocaine solution), the thermocouple was inserted into the joint and from the calibrated galvanometer, the intra-articular temperature recorded. At the same time, the mouth temperature was noted. The patient was then submerged in a bathtub of water at about 112 degress F., and the temperature of the bath gradually increased to 115 degrees, or until it became uncomfortably hot. An attempt was made to maintain the bath temperature at about constant level by the addition of hot water, and constant stirring. As soon as circulation of the bath water stopped, the local deep temperature was seen to drop due to a layer of cooler water adjacent to the skin.

The recorded data in one case of knee joint tuberculosis (Table I) shows the typical response

GLEN LAKE SANATORIUM
Diathermy Treatment

Patient # 3804 ♂ age 32 Date 8-23-34

Weight in ___ lbs. Out ___ lbs. Toc. R. Knee Water consumed ___

TIME	TEMPERATURE ° F. WATER	JOINT	MOUTH	REMARKS
3:20		97.0	97.0	THERMOCOUPLE IN R. KNEE JOINT.
3:25				WATER TO R. GROIN, L. LEG OUT.
3:30	113.0	99.5	99.6	
3:40	114.3	101.0	99.6	
3:45	114.0	101.8		
3:50		101.8		
3:55	113.5	102.0	100.2	
4:05	113.0	102.0	100.2	
4:07				BOTH LEGS SUBMERGED TO GROIN.
4:15	114.0	102.4	101.4	
4:19	113.5	103.0		
4:20				SUBMERGE TO COSTAL MARGIN.
4:21	112.0	103.0		
4:24			102.1	
4:25	112.0	103.6	102.8	
4:30	112.0	103.6	102.8	WATER DRAINED.
4:35		102.4		

GLEN LAKE SANATORIUM
Diathermy Treatment

Patient #3804 ♂ 32 Date 8-28-34

Weight in ___ lbs. Out ___ lbs Toc. R. Knee Water consumed ___

TIME	TEMPERATURE ° F. WATER	JOINT	MOUTH	REMARKS
2:55		97.6	97.5	THERMOCOUPLE IN R. KNEE JOINT.
3:00	113.0			SITZ BATH – WATER TO UMBILICUS
3:05	114.0	100.4	99.2	
3:15	114.0	103.6	101.4	
3:25	114.5	105.4	103.0	PULSE 142
3:30				WATER DRAINED.
3:35		104.2	102.8	
3:40		104.0	102.6	
3:45		104.0	102.0	

TABLE I
Chart showing water, joint and mouth temperatures at different degrees of submersion of patient.

*Orthopedic Service, Glen Lake Sanatorium, Oak Terrace, Minn.
*Department of Surgery, University of Minnesota, Minneapolis, Minn.

to various degrees of submersion, and bath temperature.

Comments

1. By submersion of an extremity up to the groin, in water at 113° F., it is possible to raise the temperature of the knee joint to 102° F.

2. Submersion of both legs up to the groins, thus heating more blood, raises the knee joint temperature to 103° F.

3. Submersion of patient to costal margin in water at 112° F., caused a further rise of local temperature to 103.6°.

4. A sustained bath, at 114°, up to umbilicus elevated the intra-articular temperature to 105° and the mouth temperature to 103°.

5. This elevated temperature drops rapidly when water is drained and is easily controlled.

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POLIOMYELITIS

(*Continued from Page 101*)

ployed. Deformities of the back shoulder and foot are particularly common and can be greatly reduced. Involvement of back muscles requires a hard flat bed surface or cast, if necessary, for several months to prevent spinal curvature. Paralysis of the upper extremity necessitates abduction of the arm with immobilization at right angles to the body. Foot drop can be largely prevented by suitable support and elevation of bed clothing.

4. Massage, passive motion and salt baths should be used as soon as the acute stage has passed, to be followed later by suitable muscle training. Over-exercise or fatigue must be avoided. Convalescence may, in some instances, extend over a period of two to three years and no rule can be laid down to cover all cases. Each must be considered individually and appliances changed to meet changing conditions. Good orthopedic advice and supervision is of the greatest value and should be obtained whenever possible.

5. The respirator: While no large series of cases has been reported in which the Drinker respirator has been used, it is, undoubtedly, of great value in certain cases. By its use, life has in many striking cases been prolonged until recovery from paralysis of respiratory muscles has occurred. Unfortunately its use has been of little help in true bulbar paralysis, and death from pneumonia may result before recovery is complete in respiratory paralysis. Frequent turning and hyper-ventilation, while in the respirator, reduce this hazard.

6. Serum treatment: During the past 20 years, a number of foreign serums for the prophylaxis and treatment of poliomyelitis have been developed; to date, none of these have proven to be satisfactory. Convalescent serum and adult blood and serum have been shown to possess the power of neutralizing poliomyelitis virus experimentally. Their value in the human, however, is still an open question. Convalescent serum has been used extensively in the treatment of cases, but reports on the results obtained are most conflicting and difficult to evaluate. This is to be expected since there has been no standardized dosage, various routes of administration have been employed, serums of different potencies used, and, too frequently, there have been no controls. Theoretically, an immune serum of high potency should at least be of value prophylactically, as in measles. There is little reason to believe that it is of any value after paralysis has developed, but if given in large enough amounts before paralysis occurs, it may yet be proven of value. It is, I believe, the feeling of most investigators that serum therapy should neither be accepted nor rejected at this time.

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THE EPSTEIN BILL

It should not be necessary at this time to tell the profession what the "model State Health Insurance Bill" sponsored by the American Association for Social Security proposes. We believe the entire profession throughout the nation has been circularized.

It is of the utmost importance that every member should read this proposed insurance law *now* and be prepared to discuss it in detail when he talks upon the subject with his legislative representatives. A comprehensive and far reaching act such as this must not be treated lightly.

We do not presume to dictate to our readers what judgment they shall render after reading this voluminous document. Let each one read and think and express his opinion without coercion. Free choice of a physician by the insured is specifically provided for and there need be no fear of an acrimonious discussion on a subject that does not contemplate a change from present rights or accepted procedure. A. E. H.

SOUTH DAKOTA'S NEW MEDICAL RELIEF PLAN

A new plan of medical relief has been formulated by the physicians of South Dakota and the State Federal Relief Committee. Beginning February 1st, the Federal Relief money was budgeted to the separate counties according to the number of families which were on relief in the respective counties, and as conditions change each month this amount so budgeted will also fluctuate.

Under the plan two physicians and one dentist have been appointed in each county. It is the duty of these professional men to audit all bills and recommend to the county relief directors the amount due each physician, dentist, nurse and pharmacist for the current month. When the bills for service exceed the medical budget, the available money will be distributed pro rata. Any unsatisfactory adjustment of the county committee is taken to the State Relief Administrator and Medical Director for final settlement.

All bills for the various forms of medical care are to be paid on the present existing fee schedule which has been in force for some time. It is the concensus of opinion that this plan will be more satisfactory to the practicing physicians as the men in each county will be able to function as a local unit, and by so doing give the relief workers more efficient medical care. E. A. P.

HANS ZINSSER*

There is no way of estimating to what extent the members of our guild read the Atlantic Monthly. This writer co-cudgels with the editor of The Journal of the American Medical Asso-

*Zinsser, Hans: Rats, Lice and History, Atlantic Monthly Press. (To be published in March, 1935.)

ciation† to draw attention to the January number of that most worthy magazine. The professor of bacteriology and immunology at Harvard has authored a book, and the publishers (with the best of traditional salesmanship and selection) included a segment dealing with the lowly and elusive louse. This is not the author's first appearance in the erudite Atlantic supposed by some to be "just a 'highbrow' magazine," but by those who get the habit, a treasure house of good taste, good writing and independent thought. Zinsser's artless way of disclosing his colossal knowledge is only exceeded by a display of humor as devastating as it is instructive.

Those of the medical guild are always on the lookout for humor—the one best antidote for pessimism. All too often it is the Rabelaisian sort, without the antidote of period and acceptance that obtained with that great French medico and philosopher. Professor Zinsser detoured that type as widely as he did the newer segmental bacteriology, proclaiming a most unbiological transition from one to another of independent organisms, based upon their size and filterability. But why talk shop?

This is about one of our scientific brothers who produces enduring humor and delightful literature; and the vital issue involved is this—our good fellows, after a casual drink or two, are likely to dub the most noble or the least meritorious of efforts, whether they be aesthetic, political or what-not, as "lousy." My brethern, we do not know our lice! Compared with ham actors or parasitic politicians lice are truly genteel and jocosely selective. Read the Atlantic and be inspired. If we must use the above opprobrious term let us at least imply that it derogates the host rather than the wily guest.

A certain "Town Crier" weekly dispatches an extraordinarily charming batch of winged thoughts, which our radios with only fair success snatch from crooners, funny men or depression lifters vibrating on adjacent wave lengths. Some time ago this "Alexander the Good" modestly rippled the ether with a few comments on a book—indeed, his book—titled "While Rome Burns." The result? Well, Rome has not been so popular since Nero fuddled and fiddled. A broadcast touching upon eminent zoologist Zinsser and his lowly pets needs only the genius of an Alexander Woolcott. To these two great kindred spirits this appeal: We need your collaboration in these "lousy" times. E. L. T.

†Editorial, J. A. M. A., January 12, 1935, p. 123.

SCIATICA

Sciatica has always been a *bete noire* to the physician. It has often been said that there was but one treatment for it and that was six weeks in bed. It is all the more heartening therefor to find that its pathogenesis is now being saught for in a more rational way than ever before.

Students of the subject are searching the lumbo-sacral region with the aid of the X-ray to determine what changes may have taken place. They are differentiating between neuralgia which is subjective only, and neuritis which is both subjective and objective, and for this latter they are finding various explanations in pictures. Of the component parts that go to make up the sciatic, the fifth lumbar nerve is the largest and yet it must pass through the smallest intervertebral foramen in its emergence from the spine close to the lumbo-sacral articulation. It can readily be seen that any anatomical change such as the collapse of an intervertebral disc from rupture of the nucleus pulposus, arthritis whether of traumatic or other origin may cause pressure and resultant impingement on the nerve at the corresponding point. Angles, curves and suspension of body weight all enter into a careful study of these cases and altogether it has become a rather complex problem but no longer can it be said that six weeks in bed is the best and only thing we can offer. A. E. H.

PAGE THE AMERICAN COLLEGE OF SURGEONS

An Eastern newspaper carries a description of a verbal tilt between Dr. Cabot, Professor of Social Ethics at Harvard University, and Dr. Fishbein, Editor of the Journal of the American Medical Association. Cabot is quoted as saying that the present medical system was absurdly expensive and absurdly inefficient; that it costs too much to be sick; and that the American Medical Association, dominated by politics, had not only failed to halt fee-splitting, but had actually encouraged the practice. In rebuttal, Fishbein stated that Cabot seemed to be living in the thoughts of a generation ago, when he spoke before the Supper Club of Johns Hopkins University lately; that, as a matter of fact, Cabot seems to be quite unfamiliar with what organized medicine has done to aid the President and the country in general in finding some satisfactory solution to the problem of providing medical care for all people; also, that Cabot seems to be unfamiliar with the measures that have been taken

through hospitals and otherwise to reduce the practice of fee-splitting.

On behalf of the medical section proper, we can fairly safely affirm that if there is any so-called fee-splitting in medical circles, it is practically negligible in amount. On the other hand, it is perhaps only right to hint that when it comes to surgery and certain of the specialties, where the fees are often larger (and perhaps in some cases actually oppressive to the family of the patients), there may have at times been some questionable practices; for instance, the allowance of a liberal "expense account" to the home doctor, who deemed it his duty to get safely to the larger city and to the group of that physician's choice, the local patient. At times the local doctor may have seemed rather too insistent upon the city doctor or group of his choice, but the answer to that was, once knowing a capable city group, why turn a patient over to other groups, even though equally efficient. Such practices probably have caused a portion of the public to be suspicious of the doctors, and thus have led to much gossip.

In regard to the high cost of medical care, Dr. Dean Lewis, of Johns Hopkins Department of Surgery, in an address before the American Medical Association a few months ago, called attention to one of the evils in the care of the sick, i.e., the often unnecessary number of side aids used by the hospital attending men, to secure a diagnosis. If we recall him correctly, he stated that orders had been issued in that hospital to restrict so much as possible the use of such aids as the laboratory, X-ray work, etc.; in other words that the attending men should aim to rely more than now seems to be customary, upon their eyes, ears, and finger tips to secure a diagnosis. Farther, he called attention to the enormous expenses incurred in the building of expensive hospitals and the equipments therefor; to the present-day desire of many persons to be hospitalized, including maternity cases, who could perhaps be about as well taken care of at home, with considerable saving to their families.

So, let's Page the American College of Surgeons for a reply to Cabot even more decisive than that from the energetic Fishbein.

A. W. S.

Proceedings Minnesota Academy of Medicine

Meeting of December 12, 1934

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, December 12, 1934. The president, Dr. Archa Wilcox, in the chair. The meeting was called to order at 8 p. m.

There were 51 members and one guest present.

Minutes of the November meeting were read and approved.

Upon ballot the following officers were elected for the year 1935:

President, Dr. Alexander Hall, St. Paul; vice-president, Dr. John Butler, Minneapolis; secretary-treasurer, Dr. R. T. LaVake, Minneapolis, (re-elected).

The scientific program followed.

Fundus Examination in Short Wave-Length Light

Arthur Edward Smith, M.D.
MINNEAPOLIS

Abstract

Gradual evolution of the ophthalmoscope from the first crude instrument of von Helmholz. Various types of illumination used as the light source in ophthalmoscopy: sunlight, candlelight, oil and gas lamps, incandescent electric bulbs—first the ordinary lamps and later the miniature bulbs for self-contained illumination. Most of the advance for a considerable time was in the direction of greater convenience rather than of increased efficiency. Various kinds of ophthalmoscopes mentioned, many of them ingeniously contrived but having one vital disadvantage in common, i. e., the employment of a light-source in which the retina is practically transparent and in which it is, therefore, except for its blood vessels, practically invisible. This is due to the presence in this light of the red and orange rays of the spectrum which are of long wave length and have great penetrating power. On the other hand, the green and blue rays, being of short wave length, have much less power of penetration and hence are easily reflected. When these rays reach the retina they do not pass through it, as some are reflected, some absorbed, and a few are altered by the retinal stroma. The retina, therefore, is rendered visible and the choroid rel-

atively invisible in persons with normal pigment development.

Mayou was probably the first man to view the fundus in short wave length light, using the mercury vapor lamp as a light source. The clinical importance of fundus examination in red-free light was first emphasized by Prof. Alfred Vogt in 1913. Gradual improvement in technic and interpretation followed. Normal fundus viewed in red-free light has a light yellowish-green color the blood vessels showing very dark, almost black, against this background. The disc appears white, resembling the disc of simple atrophy in ordinary light. The macula lutea, invisible in ordinary light, shows as a lemon-yellow area. Advantages of short-wave-length light are particularly apparent in study of this area. Changes are obvious at a much earlier time than they would be discoverable with ordinary light. Congenital absence or mal-development of the macula, responsible for defective development of sight in some young children, is immediately recognized in short wave-length light when it can only be inferred otherwise. The greatest value of this method of examination lies in the clearness with which the retinal structure is brought out. The course of the nerve fibers running out from the papilla can be traced distinctly throughout the fundus. They appear as whitish lines. Thus, early optic atrophy can be recognized since in this condition the fibers disappear and the area involved shows a sort of marbled appearance long before any ophthalmoscopic changes are discernible by ordinary light.

The unique diagnostic value of the method is apparent. In optic nerve disease it is possible to differentiate a primary from a secondary atrophy since in the latter the smallest amount of exudate on the disc or its border can be detected when it would probably be entirely invisible in ordinary light. In inflammatory disease the fibers first swell and appear abnormally prominent and then, as atrophic changes set in, gradually disappear. In retrobulbar neuritis the disappearance of the papillo-macular bundle, leaving the remaining fibers intact, is characteristic. In disseminated sclerosis patches of the fibers will be found wanting. The significance of the various fundus reflexes, particularly the double contour reflexes, are described by Vogt. These are formed by the rosette-shaped folds of the membrana limitans interna radiating from the region of the fovea centralis. These are particularly interesting when observed in contusion injuries of the eyeball, in retinal detachment, etc.

The next major improvement in ophthalmoscopes will probably be the development of an instrument which will combine the magnification and the binocular eye-piece of the Gullstrand ophthalmoscope with adequate short-wave-length illumination.

More efficient fundus examination is almost as important in general diagnostic work as it is in ophthalmology. For example, the experience of life insurance companies has demonstrated that it would be extremely desirable if hypertension could be detected at a much earlier time than is at present possible and it does not seem that anything could offer greater promise of help in this direction than the perfection of the technic of studying the blood vessels of the fundus. Gradual improvement in convenience and efficiency of apparatus for a short-wave-length fundus study. Slit-lamp light with red-free filter is satisfactory. The new Lauber red-free lamp is comparatively inexpensive and sufficient for all practical purposes. The various small hand ophthalmoscopes with red-free filters, because of the inefficiency of the light source, are practically worthless.

Dr. Smith gave a lantern-slide demonstration of paintings of fundus oculi in ordinary and in red-free light illustrating the value of the method.

Discussion

Dr. F. E. Burch, St. Paul: I am very glad that Dr. Smith has emphasized the value of red-free light but I would, perhaps, correct a statement he made that filters furnished for the ordinary ophthalmoscopes are not valuable. Dr. Smith has emphasized the value of red-free light particularly for examination of the caliber of the vessels; and in the ophthalmoscopes furnished by Bausch & Lomb the red-free filter is very valuable for studying such vascular changes. On the other hand, they are of no value whatever in showing the fine nerve fiber changes such as Dr. Smith has shown. The principal value to me of the red-free light has been in the study of vascular changes and not in the study of nerve fiber changes. In the use of the ophthalmoscope, one must have good dark adaption, just as is true in using the fluoroscope. If one does not take the necessary time it is principally a matter of contrast in emphasizing the vascular changes rather than real diagnostic means of ophthalmoscopic study of vascular changes.

Dr. A. E. Smith (in closing): Dr. Burch's exception to my statement that the small self-illuminated ophthalmoscopes are worthless is well taken. What I meant was that they are inadequate from the standpoint of the oculist since I

have never known any one who could, with them, make out the nerve fibers and many other important details. I am entirely in accord with what Dr. Burch says—that they are of aid, particularly to the general diagnostician, in the study of the vascularization of the fundus.

Operative Division of the Horseshoe Kidney: Report of Five Cases with Exhibition of Pre-Operative and Post-Operative Pyelo-Ureterograms

Frederic E. B. Foley, M.D.
ST. PAUL

On two previous occasions, the December, 1931 and March, 1934 meetings, I have discussed before this Academy the subject of Horseshoe Kidney; its embryology, anatomy, the mechanism of obstruction usually accompanying it, the clinical manifestations of the condition and its diagnosis, with particular reference to urography. Surgical correction of the condition by division or resection of the isthmus was discussed and three cases in which these procedures were employed with excellent end results were reported. The first of these three cases was encountered on the Urologic Service at the Ancker Hospital, Saint Paul, was beautifully managed by my associate on the service, Dr. Philip F. Donohue, and was originally reported by him at the American Urological Association meeting in 1931.

Since our March, 1934 meeting, at which these three cases were presented, I have made division and resection of the isthmus of the horseshoe kidney in two additional cases making a total of five cases as basis for the present presentation.

Prior to these cases there had been reported in the literature only eleven cases of division of the isthmus of the horseshoe kidney, all of them in Europe. Accordingly the five cases to be presented here are the only American cases on record, represent 36 per cent of the total number reported and though small in number, make by far the largest single series of such cases to have been reported or to have come under the personal observation and management of one individual.

From the eleven scattered European cases reported by several different individuals, no well supported conception of indications for the operation and the results to be achieved by it had emerged. The five cases to be considered here are so nearly identical as to symptoms complained of, anomalous and pathologic conditions demonstrated by urography, and excellence of results obtained by operation that it is felt a well defined and well supported conception may be drawn from them and that indications for the operation may be enumerated.

Past and present literature abounds in reports of operations on the horseshoe kidney for stone, tumor, tuberculosis and various other lesions. In such cases the anomaly has been considered incidental, either a conservative operation for correction of the lesion associated with the anomaly has been performed, or the affected half of the horseshoe kidney has been removed. The present report is not concerned with this aspect of the problem presented by horseshoe kidney for in none of these cases except one was there any significant abnormality other than the anomaly and the pelvic dilatation accompanying it. In the one case of exception to this a stone in the left pelvis was removed at the time of operation for division of the isthmus. However, the stone was known to have formed recently for a satisfactory urinary tract radiograph made three years prior to operation showed no calculus, while bilateral pain of the sort that often accompanies the anomaly had been present for many years prior to this. Accordingly these are cases of horseshoe kidney per se with symptoms directly and solely attributable to the anomaly. Associated lesions such as stone, tumer or tuberculosis were not present to cause symptoms or to provide indications for operation and were not the object of surgical attack. We were dealing only with pain incident to horseshoe kidney. In determining indications for operation only this pain and varying degrees of pelvic dilatation, possibly suggesting progressive renal impairment, came up for consideration. The results obtained by operation are attributable to correction of the anomaly.

It is well known that with our modern methods of urologic diagnosis a considerable number of horseshoe kidneys are discovered each year in which the anomaly is not associated with any other lesion except possibly the slight pelvic dilatation that often accompanies the condition. In a large proportion of such cases of uncomplicated horseshoe kidney the cystoscopic and urographic examinations have been made because of pain. It is quite certain that in a substantial number of these cases the horseshoe kidney is responsible for the pain and yet there are reported in the literature only eleven cases in which division of the isthmus without nephrectomy was undertaken either for relief of this pain or any other purpose.

It is not to be said that mere presence of a horseshoe kidney is adequate indication for surgical division of the isthmus. From my own experience I am able to cite three cases in which

the existence of horseshoe kidney was positively demonstrated but without indications for this operation. In two of these there was neither pain nor pelvic dilatation. In the third there was moderate bilateral pelvic dilatation but no long history of the recurring or persistent pain characteristic of horseshoe kidney. In this case there was left sided sudden severe pain of recent duration and this was accompanied by a calculus in the left pelvis. The stone appeared to be entirely responsible for the sudden unilateral colic. At operation the stone was removed but the anomaly was not corrected for in the absence of pain of long standing there appeared to be no indication for it. Complete and permanent relief of pain followed removal of the stone. There has been no progressive impairment of renal function and checkup bilateral pyelo-ureterograms seven years after removal of the stone showed no increase of pelvic dilatation. In the absence of pain and in the absence of progressive dilatation and renal function impairment it was not felt that this case provided indications for division of the isthmus.

When it is definitely demonstrated that the anomaly is responsible for pain of which the patient seeks relief, this may be considered adequate indication. In all of the present cases this indication was found and in addition various degrees of pelvic dilatation or hydronephrosis were present. Obstruction as evidenced by pelvic dilatation and progressive impairment of renal function, even though not accompanied by pain, would provide a good indication for interference to the end of avoiding renal insufficiency. Up to the present I am unable to share Gutierrez' view that mere existence of the anomaly is sufficient indication for the operation.

The Anomalous Development and Anatomy

Horseshoe kidney represents a departure from normal development which in its adult form and relations constitutes three anomalies: (1) of form, (2) of position, (3) of vascularization.

In the development of horseshoe kidney, fusion of the lower poles occurs early in fetal life. The caudal ends of the two renal blastemata from which the permanent kidneys are formed, lie close to the midline below the pelvic brim and it appears that there is opportunity for fusion at this time. Boyden believes that fusion occurs during migration of the kidneys, particularly at the time they pass through the brim of the boney pelvis and between the iliac vessels at which time they closely approach each other. In any case the fusion does occur and represents the anomaly of form.

Migration of the normal kidney has three components of movement: (1) ascent, (2) rotation, (3) axial deflection.

It appears that full ascent of the horseshoe kidney to the normal definitive position in the renal fossae is limited by the inferior mesenteric artery lying above the isthmus and arresting ascent when the isthmus comes in contact with it. In consequence the horseshoe kidney usually occupies a lower than normal position.

The hilum of the normal kidney early in fetal life is directed ventrally, the calyces dorsally and the ureter, crossing in front at the lower pole, joins the pelvis on its ventral surface. During migration rotation of the kidney on its long axis occurs so that the hilum becomes directed medially, the ureter joins it on what is now its medial border and the calyces extend from it in lateral direction. In the horseshoe kidney, fusion of the two lower poles prevents rotation, particularly at the lower poles, and in consequence the inferior calyces are not directed laterally as they should be but continue to extend dorsally or even medially while the ureter, crossing the isthmus and lower pole, remains ventral to the pelvis and joins its ventral surface.

The long axis of the normal kidney undergoes a deflection or reversal of angle during migration. Early in development the lower pole occupies a position closer to the midline than the upper pole and the long axis is oblique toward the midline below. When the normal definitive position in the renal fossa has been reached, these relations have been reversed. The upper pole now lies closer to the midline than the lower pole and in consequence the long axis is now oblique toward the midline *above*. In horseshoe kidney fusion of the lower poles prevents the occurrence of normal axial deflection and the lower poles remain closer to the midline than the upper poles. In consequence the long axis of each half of the horseshoe kidney retains its early fetal direction and remains *oblique toward the midline below*.

The blood supply of the normal kidney constantly changes during its migration and is largely determined by the position of the organ in relation to neighboring vascular trunks. As the kidney ascends new vessels grow into it above while the lower vessels atrophy and disappear. Because of this it has been said "the kidney ascends a vascular ladder." Normally a single artery and vein arising from aorta and cava are in position to vascularize the whole organ. Because of the abnormal form and position of the horseshoe kidney these normally placed vessels

are not capable of completely vascularizing it and in consequence other vessels arising from neighboring trunks persist.

Clinical History

As already indicated, pain is the chief and most frequent symptom of horseshoe kidney. The condition does not always produce pain. The sole cause of pain may be a lesion such as stone, tumor or renal tuberculosis. Occurring in the anomalous kidney pain of such cause is of no significance peculiar to the anomaly. When present and attributable to the anomaly per se, the pain may be of character and location suggestive of origin in kidney or ureter and may be present on one or both sides. On the other hand there may be only vague abdominal pain felt chiefly above the umbilicus, usually more pronounced on one side.

Varying degrees of upper urinary tract infection manifested by pyuria, chills, fever etc., may be present.

Gutierrez in his recent monograph mentions vague and definite symptoms such as constipation, nervousness and indigestion. In my experience they are not regularly present and do not appear to be directly related to presence of the anomaly.

Diagnosis

A mass representing the isthmus of a horseshoe kidney may be felt in the midline of the abdomen near the level of the umbilicus crossing the vertebral bodies transversely and transmitting the aortic pulse. (Such a mass was indefinitely palpable in two of the cases reported here but was not noted until after the urographic examination had been made).

In the presence of well marked hydronephrosis incident to the anomaly, one or both sides of the horseshoe kidney may be palpable. Such a palpable kidney with long axis oblique toward the midline below instead of oblique toward the midline above would arouse suspicion. If the abnormal axis were clearly made out the isthmus also would be palpable. Absence of normal mobility of a palpable kidney might be suggestive of horseshoe kidney even though its exact configuration and axis were not made out, but free mobility does not preclude the condition, for contrary to current impression the horseshoe kidney may be decidedly moveable.

The so-called Rovsing sign, pain or aggrevation of pain felt on bending backward with ventral extension of the spine, is every inconstant. (It was not present in any of the five cases reported here).

A positive diagnosis of horseshoe kidney can only be made by urography and usually makes strong demands on the competence and experience of the interpreter of the findings.

The plain urinary tract radiograph with the kidneys and ureters not filled with contrast medium may be of some assistance by outlining the isthmus or at least demonstrating the abnormal direction of the long axis of the kidneys and absence of lower pole outlines.

The definite diagnostic criteria by which the condition can always be recognized are found in the pyelo-ureterogram. Certain features of the pyelo-ureterogram of the normally formed kidney are constant and rarely are distorted by disease. These same features are regularly and characteristically altered in the pyelo-ureterogram of the horseshoe kidney. Alteration of these features occur in consequence of the interference the lower pole fusion offers to ascent, rotation and axial deflection of the kidney during its migration. The abnormal features of the horseshoe kidney pyelo-ureterogram are: (1) low position, (2) inferior calyces extending dorsally or medially from pelvis, (3) uretero-pelvic junction on ventral surface instead of at medial border of pelvis, (4) ureter overlying pelvis and crossing the abnormally directed inferior calyces, (5) long axis oblique toward the midline below (line drawn through the tips of the superior and inferior calyces).

A well filled unilateral pyelo-ureterogram made with proper radiographic technique usually contains sufficient evidence on which to make the diagnosis. However, with a pyelo-ureterogram on only one side it may not be possible to differentiate between horseshoe kidney and unilateral fused kidney (so-called "tandem kidney" or "crossed dystopia"). For positive diagnosis and satisfactory demonstration of relations bilateral pyelo-ureterograms should be made.

The poor filling that obtains with excretion pyelo-ureterograms made by intravenous injection of the contrast medium may render them inadequate for positive identification of the condition. Absence of filling of some calyces frequently occurs with this method. It is evident from the foregoing discussion of diagnostic criteria that outlining the inferior group of calyces to show their abnormal medial direction and the reversed long axis of the kidney is essential. Also good filling of the ureter, which rarely obtains in excretion pyelo-ureterograms, is necessary to show its abnormal relationship to the pelvis and inferior calyces and the abnormal position of the uretero-pelvic junction.

Method of Operation

The motion picture film will illustrate the method of operation and details of the procedure need not be described.

There has been considerable discussion concerning the incision to be employed and particularly the comparative advantages of trans-peritoneal and extra-peritoneal approach to the horseshoe kidney. In all of our cases the usual flank incision below and parallel to the twelfth rib extending from the anterior border of the sacrospinalis muscles well forward into the abdomen with an entirely retro-peritoneal approach has been employed and has been found entirely adequate. Because of the impediment from loops of bowel, mobilization of the colon and opening the posterior parietal peritoneum, it would appear that trans-peritoneal approach by way of a vertical abdominal incision would be a great handicap. Besides giving less technical facility it carries the risk of peritoneal infection. The retro-peritoneal approach is safer and permits the whole mass of intra-peritoneal structures to be displaced toward the midline, opening a large cavity around the kidney.

When the half of the kidney on the side of operation has been shelled out of its investing fat and peri-renal fascia, as in the ordinary kidney exposure, traction on the lower fused pole will draw the lower extremity of the opposite kidney across the midline providing perfect facility for division of the isthmus. The division is made between two rows of mattress sutures which control bleeding from the cut surfaces. The dividing incision is made in vertical direction and a little to the opposite side of the midline of the isthmus.

It is important that the half of the divided kidney on the side of operation be accurately positioned by fixation with its upper pole well in against the vertebral bodies and its lower pole well out lateralwards so that the ureter in approaching the pelvis does not lie across the lower pole or divided isthmus. If these relations cannot be affected because of the medial extension of the lower pole and isthmus, resection of the lower extremity of the divided kidney may be required.

Summary of Cases

Four of the five patients were women all in the second or third decades. One was a man, age 38. In all cases the chief complaint was pain and in most instances its character was fairly typical of renal origin. In all of the cases obstruction and varying degrees of pelvic dilatation were demonstrated and in some, varying degrees of upper tract infection and pyuria. In all cases operation was undertaken with relief of pain its chief object. In all cases this object has been fully attained, the patients having complete relief of painful symptoms. It should be noted however, that in two cases of unilateral pain (case 1 and case 2) division of the isthmus and relief of pain on the side of operation was followed by development of identical pain on the opposite side and that in these two cases correction of the abnormal position of the opposite half of the horseshoe kidney by a second operation gave complete relief of this pain. In one case (case 5) the pain originally bilateral has been relieved on both sides by division of the isthmus and nephropexy on the side of operation. In each of the other two cases of bilateral pain (case 3 and case 4) division of the isthmus and fixation on the side of operation has given relief of pain on this side while pain on the opposite side persists and nephropexy on the second side remains to be made.

In conclusion it may be said:

1. The anomaly horseshoe kidney without other pathologic change except the slight pelvic dilatation often accompanying it may produce pain.

2. Pain of such origin may be relieved by operative division or division and resection of the isthmus of the horseshoe kidney.

3. An appreciable number of such cases are identified as cases of horseshoe kidney and the opportunity to afford relief by surgery is neglected.

4. Indications for operative division or resection of the isthmus of the horseshoe kidney are: pain definitely originating in the horseshoe kidney or obstruction with pelvic dilatation and demonstrable progressive renal function impairment.

5. Five cases of horseshoe kidney with pain due to the anomaly and completely relieved by operation are reported in summary.

6. The anomalous condition may be fully corrected and normal anatomic relations established by operation.

7. The surgical procedure is safe, is accomplished with no undue difficulty and when properly performed yields satisfactory results both as to anatomic correction and relief of subjective symptoms.

Discussion

Dr. A. C. Strachauer, Minneapolis: Dr. Foley has given us an excellent presentation of

his subject and the motion picture was certainly very well done. His graphic demonstration of the anatomical interference to the ureter by the isthmus appears to me to be a sound basis and indication for the division of the isthmus. While I have operated upon a number of horseshoe kidneys, I have never personally had occasion to perform the operation as described. Dr. Foley may be interested in knowing that the late Dr. James Moore nearly a quarter of a century ago divided the isthmus in a horseshoe kidney upon a Northwestern Hospital nurse. In addition to pain, she complained of a throbbing sensation which I understood was completely relieved by the operation.

Dr. Foley (in closing): I have nothing in particular to add. Dr. Wright's account of the report from Belgrade of thirty of these cases is impressive. He did not definitely indicate that they were operations for division of the isthmus. Operations on the horseshoe kidney have been reported many times. They have been undertaken for stone, for tuberculosis and for other conditions. Usually a conservative procedure, such as removal of a stone or possibly removal of one side of the horseshoe kidney, has been reported. Division of the isthmus is not so frequent only eleven cases having been reported.

For certain parts of the operation a para-rectus incision would be helpful; for other parts it would be a handicap. The flank incision is entirely adequate for the whole procedure.

Dr. Moore's division of the isthmus so long ago, as mentioned by Dr. Strachauer, is interesting. Dr. Moore is not the only one to have divided the isthmus and failed to report it. From personal communication with other surgeons I know of three or four other such cases.

Prior to report of these five cases presented tonight there were no American cases reported and I am able to find in the literature a total of only eleven reported cases, all of them from Europe.

I am sure that the frequency of horseshoe kidney is not fully appreciated and that it is not generally known that the symptoms produced by the condition and the impairment of renal function caused by it are capable of relief by the operation I have described and illustrated in the motion picture.

The meeting adjourned.

R. T. LaVake, M.D.,
Secretary.

NEWS ITEMS

Dr. N. G. Mortenson, St. Paul, has been re-elected president of the Minnesota State Board of Health.

Dr. H. T. Sherman, Echo, has purchased the practice of Dr. W. M. Stryker, at Plainview, Minn.

Dr. Arthur B. Hunt, Cedar Rapids, Iowa, has been appointed a member of the staff of the Mayo Clinic, Rochester.

Dr. A. J. Paulson, Watertown, S. D., was recently honored by a birthday dinner, extended by his many friends in that city.

Dr. G. L. Gosslee, Moorhead, Minn., is organizing a group of physicians, surgeons and dentists to operate a clinic in that city.

Dr. F. J. Halloran, who has been in active practice at Chatfield, Minn., for nearly 50 years, died last month after a short illness.

Halstad, Minn., physicians and citizens are hard at work in raising funds to establish a hospital, which is badly needed in that city.

Grand Forks Medical Society new officers are Dr. L. H. Landry, president; Dr. W. A. Liebeler, vice-president, and Dr. P. H. Woutat, secretary.

Dr. D. K. Worden, Lewistown, Mont., is in Los Angeles, where he will spend several weeks at the University of California in post-graduate work.

Dr. L. G. Dunlap, Anaconda, Mont., is spending a few months in Los Angeles, Calif., where he will take a special course of post-graduate work.

Dr. G. S. Adams, superintendent of the state hospital at Yankton, S. D., was recently tendered a "Bridge Dinner" by his staff and hospital friends.

Dr. D. W. Gross, Wessington Springs, has purchased the practice of the late Dr. H. O. Morgan, at White, S. D., and is now settled in his new location.

Dr. H. A. Schneider, who has been in active practice for over 30 years at Jordan, Minn., has decided to retire and enjoy a long vacation, that he is justly entitled.

Dr. R. J. Jackson, Rapid City, S. D., was married last month to Miss Katherine McKee,

of that city. They are spending several weeks in New Orleans and Havana.

Dr. Arthur Jacobson, formerly in active practice at Rugby, N. D., died very suddenly on January 30 at Seattle, Wash., where he had resided for the past few years.

Dr. Martha L. Bayles, who has been in active practice at Townsend, Mont., for the past five years, passed away last month after a short illness from the results of an infection.

Dr. Carl Gustaf Arvidson, Minneapolis physician, has been knighted by King Gustav of Sweden. He will receive the Order of Vasa at ceremonies to be arranged later in the season.

Dr. W. J. Holderman, Duluth, while enjoying a game of bowling with a group of friends on the evening of January 23, was stricken with a heart attack and passed away almost instantly.

At the annual meeting of the Mower County Medical Society, recently held at Austin, Minn., the new officers are Dr. O. H. Hegge, president; Dr. B. J. Cronwell, vice-president, and Dr. P. A. Robertson, secretary.

The Western branch of the American Public Health Association will hold its annual meeting at Helena, Mont., on July 1, 2 and 3. Dr. W. F. Cogswell, Helena, is president, and Dr. W. P. Shephard, San Francisco, Calif., secretary.

Dr. E. G. Balsam, Billings, resident member of the Montana State Board of Health, reports that there will be very few changes in the manner of handling relief and treatment of patients during the year 1935. Physicians will continue to receive the same fee.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). The program for the month will be as follows: February 19, "Hives"; February 26, "Mouth Health and General Health."

The Upper Mississippi Medical Society held their annual meeting at Brainerd, Minn., last month and elected Dr. E. J. Simons, Swanville, president; Drs. V. E. Quanstrom, Brainerd, B. W. Kelly, Austin, and H. L. Lamb, Little Falls, vice-presidents, and Dr. G. I. Badeaux, Brainerd, secretary.

Dr. Emil Goetsch, surgeon-in-chief of Long Island College Hospital and professor of surgery at College of Medicine, recently addressed the thirteenth annual dinner of the Minneapolis Surgical Society. His subject was "Operability of Thyroid Disease." Dr. Goetsch is recognized as one of the foremost research experts in disease of the thyroid gland.

The Minnesota Academy of Medicine held its annual meeting on January 9, at the Town and Country Club, St. Paul, and elected its new officers as follows: Dr. A. R. Hall, president; Dr. John Butler, vice-president; Dr. R. T. LaVake, secretary, and Drs. Litzenberg, Freeman and Wilcox, members of the executive committee. Dr. A. E. Wilcox, the retiring president, presented his annual report.

Six fellows in the Mayo Foundation were awarded advanced degrees by the University of Minnesota at commencement convocation last month. Dr. F. C. Lendrum received the degree of doctor of philosophy and Drs. T. W. Goodwin, C. J. McCormick and P. F. Olson, the degree of master of science in surgery. Dr. J. L. Emmett received the degree of master of science in urology, and Dr. J. C. M. Brust, the degree of master of science in proctology.

The annual meeting of the Sioux Valley Medical Association, held at Sioux Falls last month, brought out a large attendance, with an interesting program being presented. All of the papers will be published in The Journal-Lancet in future issues. Dr. S. A. Campbell, Norfolk, Neb., was elected president; Drs. F. P. Winkler, Sibley, Iowa, and L. L. Sogge, Windom, Minn., vice-presidents, and Dr. Roscoe Jepson, Sioux City, Iowa, secretary.

Dr. Elliott C. Cutler, Moseley Professor of Surgery at Harvard University Medical School, will give the second lecture in the annual Judd Lectureship in Surgery on Tuesday, February 19, in the auditorium of the Chemistry Building at the University of Minnesota at 8:15 P. M. The subject of Dr. Cutler's lecture will be "Total Thyroidectomy for Heart Disease." Dr. E. Starr Judd, who endowed this lectureship in Surgery is a graduate of the University of Minnesota of 1903.

Dr. M. C. Smetters, well-known Butte, Mont., physician, was honored by his fellow medicos by election to the presidency of the Silver Bow Medical Association. Other officers elected were: Dr. Pat Kane, vice-president; Dr. A. W. Morse, treasurer, and Dr. C. R. Canty, secretary. Two principal addresses were given at the annual meeting. Dr. J. H. Vasko, Great Falls, spoke on

"Injuries to the Knee Joint," and Dr. L. C. Terrill, Galen, discussed the "Tuberculosis Tests Being Administered to Butte High School Children."

A multiple distinction involving four of its members is held this year by the Interurban Academy of Medicine, organization of Duluth and Superior physicians and surgeons. Dr. W. A. Coventry, Duluth, is president of the Minnesota State Medical Society, and Dr. T. J. O'Leary, Superior, is executive head of the Wisconsin State Medical Association. The second oldest member of the Badger state organization is Dr. W. E. Ground, Superior. Dr. C. F. McComb, Duluth, is the oldest member of the Minnesota Medical Association.

Inter-change lectures by the members of the Faculty of the Medical School at the Mayo Foundation, Rochester, will be held on the following dates: February 14, Dr. Henry E. Hartig, "Sound and Hearing"; February 28, Dr. Irvine McQuarrie, "Effects of Certain Salts In the Diet on Blood Pressure and Carbohydrate Metabolism"; March 14, Dr. Morris Nathanson, "Observations Relative to Cardiac Syncope and Sudden Cardiac Death"; March 28, Dr. John T. Tate, "Transmutation of the Elements"; April 11, Dr. Henry E. Michelson, "Tuberculosis of the Skin."

A sectional meeting of the American College of Surgeons, embracing Manitoba, Wisconsin, North Dakota, South Dakota and Minnesota is to be held in St. Paul, March 15-16-17. On the program will be men of national reputation, some coming from long distances. The clinic will be given in the mornings and scientific papers and movies in the afternoons and evenings. The entire program is open to all members in good standing of County Medical Societies and all state and provincial districts. Special welcome to all medical men to attend the program whether they are members of the College or not.

A special program of lectures and demonstrations in medicine will be held under the direction of The Mayo Foundation from March 4 to 8, inclusive. Mornings will be devoted to surgical and medical clinics. In the afternoons and evenings symposiums will be conducted on urology, acute abdominal conditions, pediatrics, gastroenterology, the thyroid and parathyroid glands, and dermatology. In addition, two clinico-pathologic conferences will be held. On Friday evening, March 8, the Minnesota Trudeau Society will hold an open meeting. While these programs are arranged primarily for the Fellows of the Foundation, visiting physicians are invited to attend.

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The JOURNAL LANCET

Minneapolis, Minnesota
March 1, 1935

Vol. LV, No. 5
New Series

Heart Disease*

Walter L. Bierring, M.D.
Des Moines, Iowa

IT IS A distinct pleasure to acknowledge my appreciation for the privilege and honor of being a part of your program.

After more frequent contacts with state medical societies, I have become convinced that the leadership of the American Medical Association is largely dependent upon the co-operative relationship of its constituent state and county societies. This is particularly true in promoting its function of a continuing education for the general practitioner.

It was thought to be of interest to discuss the relation of heart disease to general practice. It is unfortunate that heart diseases have become a highly specialized field of medicine and to some extent have been taken out of general practice.

Mackenzie always contended that the general practitioner, by reason of his first contact with cardiac cases and his familiarity with the habits and history of the patient, was able to detect the earliest signs of disease.

The general practitioner meets with heart disease in three main forms. In the young patient, heart disease, if not congenital, is the result of acute infections, particularly acute rheumatism or streptococcic infection, diphtheria, scarlet fever, influenza, usually involving the endocardium, occasionally the pericardium, and the myocardium. Valvular affections are most common, and their diagnosis depends entirely upon physical signs. The diagnosis is made largely by recognition and analysis of murmurs, accompanied by special signs of enlargement of the heart.

In examining large numbers of school children, Cabot and others recognized by physical examination well developed cases of valvular diseases in which the same was not suspected.

Toward middle life, as a consequence of syphilitic infection with a special affinity for the vascular structures, aortic disease—aortitis, aortic insufficiency is a frequent manifestation of heart disease. Here again physical signs are diagnostic, as the ringing second aortic tone of aortitis, and the characteristic murmur and peripheral vascular phenomena of aortic insufficiency. The subjective story of the anginoid syndrome is likewise characteristic.

In the later periods of adult life, a type of heart disease comes to the attention of the physician which constitutes by far the largest proportion of cardiac disorders. It affects principally the coronary circulation and the myocardium, and has been variously termed chronic myocarditis, chronic degenerative myocardial disease, myomalacia cordis, and coronary artery disease.

In its diagnosis it differs from other forms in that a carefully taken history of the subjective symptoms tells the story. Often it is first manifested by the signs of myocardial fatigue, or those indicating encroachment upon myocardial

*Informal address at the Forty-seventh Annual Meeting of the North Dakota State Medical Association, Fargo, N. D., May 28, 1934.

reserve which is recognized long before the stage of circulatory failure is reached. This is often expressed as tiring or fatigue after the ordinary efforts or habits incident to vocation or daily order of life. There is also the mimicry of gastric symptoms; these usher in the early steps of heart failure as breathlessness, palpitation, and substernal distress. The latter is the symptom for which the patient usually seeks medical advice. This varies from a feeling of heaviness to a vice-like constriction experienced in the different forms of angina. The Osler classification of angina into two forms still prevails, designating the angina of effort as produced by some external physical or mental effort, and the angina of rest as occurring while asleep or at rest.

A new chapter was added to our knowledge of heart disease by the classic description of coronary thrombosis of James B. Herrick in 1912. The coronary circulation is now of basic importance in chronic heart disease, and anatomic changes in the arteries and cardiac musculature constitute the pathologic phenomena of this type of heart disease.

Two forms of coronary disease are now recognized, acute thrombosis which is sudden in onset, and according to the area involved and extent of resulting infarction presents in varying degree the signs of angina: with associated collapse, fever, dyspnea, leucocytosis and circulatory failure. As recovery occurs a certain amount of myocardial damage remains.

In the gradual development of coronary artery disease, a narrowing and constriction of the arterial lumen occurs. With effort, an anginal paroxysm is a common occurrence, and the resulting degenerative changes in the myocardium are manifested by different degrees of circulatory or myocardial failure.

In this form of chronic heart disease, electrocardiography has been a distinct aid in diagnosis. The characteristic deviations from the normal in the Q-R-S complex, the T wave, as well as variations in rhythm, and signs of right or left ventricular preponderance have added greatly to the knowledge of the condition.

All this had developed a clinical syndrome of such constancy as to permit a ready diagnosis of acute coronary obstruction, as well as chronic coronary disease, at the bedside.

A frequent coincident condition with chronic heart disease is vascular hypertension. An enlargement of the heart usually results which is regarded as potential, myocardial impairment. A thickening of the ventricular walls leads to changes in the coronary branches particularly those of the left coronary artery, resulting in endarteritis, narrowing and thrombosis. The signs of coronary artery disease often constitute a definite stage of hypertensive heart disease.

Myocardial insufficiency, heart failure and visceral congestion forms the frequent terminal stage of the different clinical types of heart disease, and as such present a clinical syndrome that is easily recognized. The therapeutic management in this stage is the same whatever the original pathologic condition.

With its wider recognition, heart disease is assuming increasing importance as a public health problem.

As shown by the accompanying slides, heart disease leads all diseases at the present time, taking its greatest toll at the age period of 70-74 years.

Heart disease caused 18.8 per cent of all deaths in 1930.

It is interesting to note that the peak of tuberculosis occurs at age period of 20-24.

It is further significant to note the death rate from rheumatism during the first twenty years of this century. There has been a marked reduction during that time. There is also a noticeable reduction in the diphtheria rate following the use of diphtheria antitoxin.

It is noted further that the negro race is very susceptible to heart disease. In the twelve southern states of Kentucky, Maryland, Virginia, Louisiana, Tennessee, Florida, South Carolina, Georgia, North Carolina, Alabama, Arkansas and Mississippi, this is particularly evident: the proportion being one and one-half times greater than its occurrence in the white race.

The chart showing the death rates by age groups in the U. S. registration area from 1920 to 1930, is particularly interesting. We are accustomed to speaking of the great increase in the mortality from heart disease, disregarding the age period at which these increases have occurred. By analyzing the mortality rates according to age-periods, it will be readily seen that almost the entire increase in heart disease mortality has occurred at age 40 and over. The death rates up to age 30 are low. From the inset on this chart showing the percentage of changes, the astounding fact is disclosed that under five years of age there has been an actual decline of the heart disease death rate in the last ten years of 34 per cent. At age 5-9 there has been a decrease of 27 per cent. Even at ages of 10-19, a 23.4 per cent decline is apparent.

(*Continued on Page 143*)

Fungous Diseases of the Lungs

Arthur Q. Penta, M.D.*
Philadelphia, Pa.

IN THIS article on the pneumomycoses, I wish to lay particular stress on the importance of early diagnosis and treatment and to discuss a few of the conditions more commonly seen. Many articles have appeared on the subject in which mention is made of the close resemblance between this type of disease and tuberculosis. True as this may be, I wish to add my experience to the observations of others,[1] that in fungous disease there is usually some disproportion between the amount of pathology and the mild symptoms, the temperature is lower and in general the patient is not too ill. The sputum at first though scanty in amount has the characteristic yeast like odor. In fungous disease there is less apt to be an involvement of the apical regions.

Pneumomycosis undoubtedly occurs more often than is generally suspected or recognized. The condition should always be kept in mind when dealing with any type of pulmonary disease. Time and again, I have seen cases in which a temporary diagnosis of tuberculosis has been made, and where the sputum has been repeatedly negative for acid fast organisms, and yet no thought was given to this type of infection. It is always a good plan when examining the sputum from suspected cases of tuberculosis to also at the same time culture the sputum on Sabouraud's media. In this way, many of these conditions previously overlooked will be diagnosed. Examination of the fungus directly from the sputum, can be facilitated, by adding to the preparation a few drops of a ten percent solution of sodium hydrate or potassium hydroxide, which will dissolve and precipitate some of the more tenacious and fibrinous material from the sputum.

We are fortunate that in potassium iodide, sodium iodide and ethyl iodide, we have a group of drugs which if used early will prove very efficacious in the treatment of many of these fungi infections. It is a good plan to start with ten grains, t.i.d., and gradually increase the dose to fifty to sixty grains, t.i.d.[2] Patients suffering from resistant infections should receive in addition, ethyl iodide inhalations, .5cc to 2cc daily. Ether and oil per rectum has also been advocated as an adjunct in the treatment of resistant infections.

*Department of Medicine, Temple University.

Since the time of Robin, Wernicke,[3] Busse,[4] Gilchrist and Stokes,[5] Montgomery and Ormsby,[6] Castellani[7] and Ashford,[8] many attempts have been made to classify and identify the fungi pathogenic for man. In recent years Stovall[9] and his co-workers have added greatly to our knowledge of this subject. The pathogenic fungi can be conveniently divided for purpose of study, in the following group.

I. *Yeast Like Fungi*—In their simplest form they reproduce by budding, and they may or may not form a mycellium.

(1) Saccharomycete.
(2) Monelia.
(3) Torula.
(4) Oidium.
(5) Blastomycete.
(6) Coccidioidal Immitis.
(7) Sporothrix.

II. *Mold Like Fungi*—The fungi of this group are characterized by the presence of a stalk with a spore bearing head which forms fruiting branches and which support specialized cells called conidia.

(8) Aspergillus.
(9) Penicillium.
(10) Mucor.

III. *Higher Bacterial Forms.*
(11) Actinomycete.
(12) Nocardia.
(a) acid fast,
(b) non acid fast.

Moniliasis

The pulmonary form is caused by a yeast like fungus, which falls under the classification of

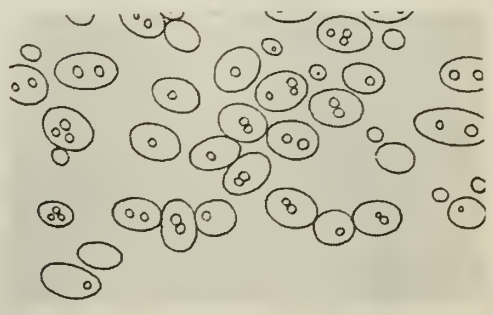


FIGURE 1
Monilia.

Monilia Albicans. The organism is oval in shape and measures from three to ten microns in diameter. Reproduces by budding and produces septate hyphae which intertwine to form a mycellium. This type of infection responds very well to iodide therapy. This organism is often found in association with many types of bacteria in common respiratory infections, and may, if the pulmonary tissue becomes markedly lowered, to completely overgrow the primary bacteria. I believe that in a great many of the pulmonary cases which have been recently reported the monilia was purely a secondary invader. The over growing of the many bacteria by this fungus may be so complete, that it may be recovered in pure culture. It is not always easy to reproduce this disease in experimental animals, the reason for this, in all probability, is that the organism at varying periods of the disease may lose its virilunce.



FIGURE 3
Shows appearance of culture on Saubouraud's media. A—Blastomyces. B—Monilia. Note the fuzzy outline of the Blastomyces.

Blastomycosis

The yeast like fungus in this condition appears in the lesion as an oval or spherical body, having a diameter of ten to twenty microns, and consisting of finely granular protoplasm. It is inclosed in a double contoured, highly refractive hyaline capsule. Multiplication in the tissues take place by budding, however some mycologists have reported reproduction by sporulation. On examination of cultures, spherical or oval budding cells, fruit bearing aerial hyphae and mycellium may be seen.



FIGURE 2
Blastomyces from culture showing budding forms and aerial hyphae.

In cases responding well to iodides, repeated examination of the fungus directly from the sputum will show the cell body in all degrees of vacuolation. In the more resistant type of infection, there is no such tendency on the part of the cell body. Blastomycosis if diagnosed early, before the stage of excavation and cavity formation, will respond to intensive iodide therapy.

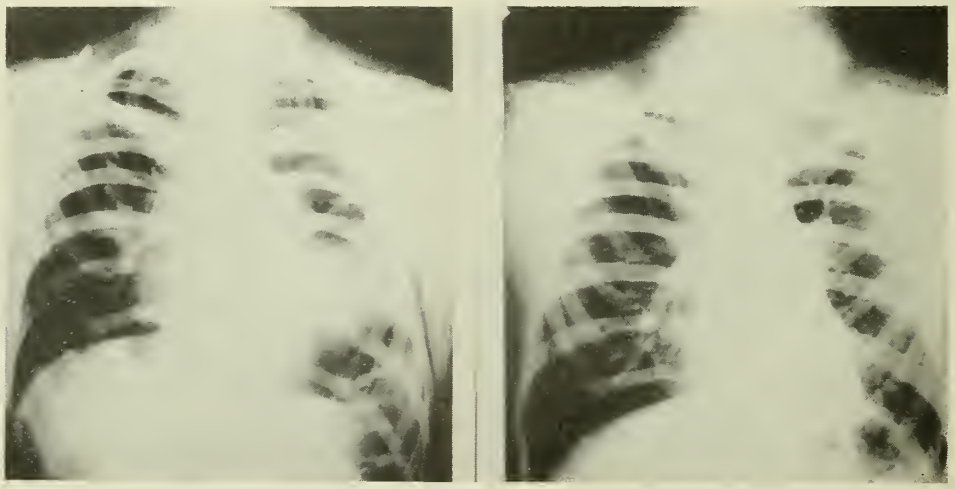


FIGURE 4
Pulmonary Blastomycosis, which responded to intensive iodide therapy.

Cutaneous manifestations, which are a characteristic feature of this disease, may precede the onset of pulmonary symptoms, and in their absence the condition is often confused with tuberculosis. In recent years more than half of the reported cases of pulmonary blastomycosis, have had no evidence of cutaneous lesions. The constant absence of tubercle bacilli and the repeated finding of yeast cells in the sputum, ought to make one suspicious of Blastomycosis. In general, in any case with pulmonary symptoms and expectorating two ounces or more of mucopurulent sputum, tuberculosis can be excluded, if several repeated examinations are negative for tubercle bacilli.

Coccidioidal Granuloma

In a statistical study of this disease the greatest number of reported cases have been from Southern California and from the San Joaquin Valley. The fungus coccidioides immitis, is a round or oval doubly contoured body, having the same appearance as the blastomycete, it differs however in that it contains endospores and reproduces by endosporulation instead of budding.

As in Blastomycosis, cutaneous lesions may precede the onset of pulmonary symptoms, however it is more common in Coccidioidal granuloma, to have a history of respiratory infection several weeks before the appearance of the external lesion.[10] Trauma seems to be a predisposing factor, and lesions often develop at the site of the traumatized area. Involvement of the eiphyseal ends of the long bones is very common in this condition, and many of the cases develop large fluctuating subcutaneous abscesses from which pus can be aspirated with ease. It was through the courtesy of Prof. Newton Evans that I saw such a case, and was impressed with the size of the many nodular subcutaneous masses. In the pulmonary form of this disease, the clinical, and the pathologic picture is difficult to distinguish from tuberculosis.

From a study of the roentgenograms of many of these cases, Evans and Ball[10] make the following comment. A diffuse shadow, at times simulating Pnuemonia, occurs in many cases, and involves the right lower lobe twice as frequently as in any other part of the lung field, though it may occur in any portion, and twice as frequently in both hilar regions as in one. In many cases the lesions are those of a disseminated miliary tuberculosis.

The pulmonary form is usually fatal and all attempts at treatment have proved very unsatisfactory. In the skin form Ball and others have obtained gratifying results with the local application of iodine in concentrated form. Thymol, colloidal copper, copper sulphate, potassium and antimony tar rate and X-ray have proved of some value in the external form. Wherever possible surgery should be applied. Injection of coccidioidin as an aid in the treatment has proved helpful.

Sporothricosis

The pulmonary form is occasionally seen in this country, though by far the greatest number of reported cases have come from Europe. The causative agent is a yeast like fungus of either the Schenkii or Beurmanni type.[11] It multiplies by budding and in cultures it forms a mycellium composed of freely branching septate hyphae, which in turn give rise to secondary conidia.[12] The cutaneous lesions which develop in this condition are difficult to differentiate from the primary lesion of syphilis, cutaneous tuberculosis, and the ulcero-glandular type of tularemia. The fungi of the Sporothrix group are very sensitive to the iodides and many of the reported cases have shown a complete cure following a short course of treatment. In the more resistant cutaneous lesions, unfiltered X-ray radiations are used in combination with the iodides.

Aspergillosis

Is caused by a mold like fungus, possessing a basal stem and a stalk with a spore bearing head. On account of its resemblance to a brush, it derives its name from the word aspergillium, meaning a brush which is used in the catholic church for the sprinkling of Holy water.[13] In this group of fungi there are many non-pathogenic forms which are used to good advantage commercially, such as for the ripening of roquefort cheese, the production of citric acid, etc.

There are three varieties of Aspergillus which may under conditions of lowered pulmonary resistance, cause an infection of the lungs. A. fumigatus, A. flavus and A. Niger. The first case of human infection in man was reported by Bennet[14] in 1843. Virchow[15] first determined the identity of the parasite in 1856. Dieulafoy[16] reported the occurrence of Aspergillosis among the pigeon feeders of France. Renon described the same condition among the workers in the hair sorting industry and isolated A. fumigatus as the causative agent. In all of the above reported cases the disease terminated fatally.

In this country Aspergillus infection does not seem to be of the pathogenic type, and in a suspected case it is always a question of considerable dscussion as to whether or not the fungus is

purely a contaminate or a secondary invader. In a public health survey of the iron mines in the Pitcher, Oklahoma district, in which many chest roentgenograms were taken,[17] Sayre and Merriweather were puzzled to find in many plates, discreet, dense like shots throughout both lung fields of workers who had never been ill.

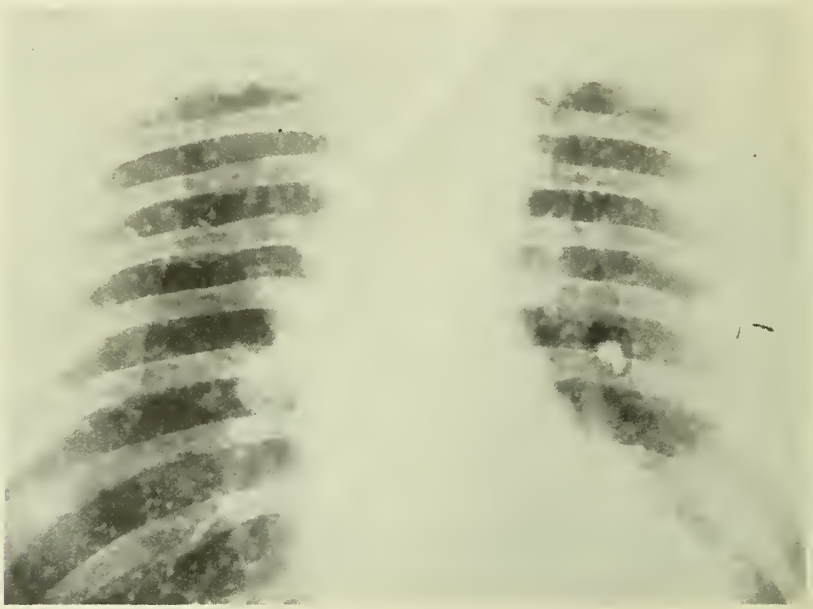


FIGURE 5
Aspergillus Niger infection of the lungs? Note the discreet and dense like shots miliary distributed throughout both lung fields. This patient has never been ill in his life.

From the sputum they were able to isolate the A. fumigatus fisheri and A. niger. Antigens from both of these fungi were made and when used only the A. niger caused a dermal reaction.

When these plates were submitted to a group of eminent roentgenologists the diagnosis was as follows.

(1) Chronic miliary tuberculosis which has healed by calcification.
(2) Pneumonoconiosis.
(3) Calcium metastasis.
(4) Pneumomycosis.

Since the condition has also been found among the wheat thrashers of Oklahoma and Nebraska, the condition has been nicknamed Wheatina. Opie in commenting on this particular condition, remarks that more and more we are finding a type of inactive miliary tuberculosis. It is his belief that a great many more cases recover than is believed.

Actinomycosis

Bollinger[18] first described this disease in cattle and showed that it was due to a vegetable parasite., to which later Harz gave the name of Actinomyces Bovis because of its radiate structure.[19] In 1878 Israel discovered the fungus in man, and later Ponfick[20] pointed out the identity of the human and bovine infection. Actinomycosis is at present classified by many as one of the higher bacteria and is included under the Streptothrix infections. Its difficulty of classification becomes apparent, since it possesses both the characteristics of a fungus and a higher bacteria.

The ray-fungus is the causative agent and is present in the lesion and in the pus in the form of spherical or irregularly rounded, grayish or yellowish granules. When these so called sulphur granules which are a feature of this disease, are crushed between slide and cover glass and examined under high power, one sees an indefinite mass of tangled fibers, and debris.

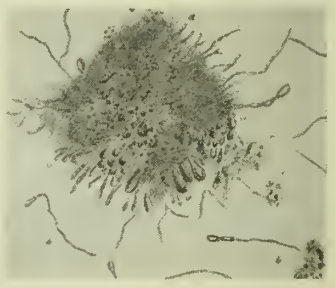


FIGURE 6 (J. Israel)
Actinomyces granule showing mycellium with club shaped bodies at the extreme margin.

Pus cells are found at the centre and at the periphery there is dense network of interlacing

filaments, which at their extreme margin show the refractive clubs or rays. It is important that one sees both the rays and mycellium before making a diagnosis.

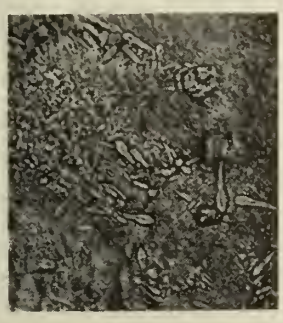


FIGURE 7

Crushed actinomyces granule from fresh sputum unstained under high power magnification showing the clubs or rays. In cultures these are not seen.

Pulmonary actinomycosis is invariably fatal, and although this condition is often confused with tuberculosis, pathologically it is quite different. There is no other disease of the lungs, except perhaps coccidioidal granuloma, where there is such a tendency on the part of the disease to burrough its way in all directions. From a single lesion in the lungs one sees many sinuses radiating in all directions. The involvement of the neighboring organs by direct extension is a striking feature of this disease. Invasion of the pleura and peripleural tissues is almost invariable, and which usually leads to the formation of adhesive pleurisy. Erosion of the ribs, perforation of the intercostal spaces in one or more places, and superficial thoracic abscesses are often found. Invasion of the pericardium and the mediastinum with erosion of the vertebra, takes place with regular frequency.

Israel[21] has divided the clinical course of the disease into three stages. In the first or broncho-pulmonary stage, where the process does not extend beyond the limits of the pulmonary tissue. Incidentally it is in this stage that the condition might be amenable to surgery, for Actinomyces are anaerobic and with the entrance of air which follows the free opening of the many sinus tracts and the resection of the circumscribed diseased tissue, a complete cure may be brought about. Unfortunately, one never sees a case in this early stage. Involvement of the pleura marks the beginning of the second or the pleurothoracic stage, while invasion of the thoracic wall terminates in the third or fistulous stage. It is in this stage that we most commonly see the condition. This classification presents a useful picture of the usual progress of the disease. The medical treatment of this condition makes up one of the gloomy chapters in the history of medicine. In recent years several cases have been reported, which have responded to the iodide and copper sulphate therapy. In this disease any form of treatment is worth the trial.

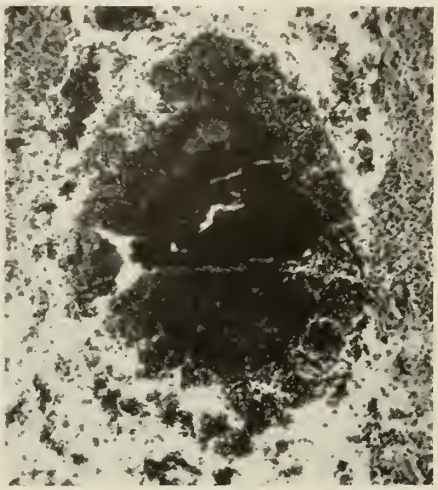


FIGURE 8

Crushed granule stained by haemot-eosisn showing the radial arrangement of its structure.



FIGURE 9

Stained actinomyces from culture showing branching filaments.

Summary

(1) Fungous infection of the lungs is more common than is generally suspected, and the condition should always be considered in any case with pulmonary symptoms and the repeated absence of tubercle bacilli. When examining the sputum from a suspected case of tuberculosis, it is a good plan to also at the same time, culture the sputum on Sabouraud's media.

(2) Once a definite diagnosis has been established, iodide therapy should at once be instituted.

(3) The final diagnosis of fungous infection

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A Few Steps in the Progress of Medicine During 1934*

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Lisbon, N. D.

Medicine

THE Nobel Prize in medicine for 1934 was awarded to Dr. George H. Whipple, University of Rochester, and Drs. George R. Minot and William P. Murphy, Harvard University, for their discoveries on liver therapy in the anemias.

Dr. F. G. Banting, University of Toronto, one of the discoverers of insulin, was created a Knight Commander of the Order of the Britsh Empire.

Ability to hasten blood-clotting and thus to control hemorrhage is a property of human milk fresh or dried, but not of milk from other animals, Prof. A. Sole of Vienna reported.

Tetany, severe nervous and muscular disease featured by painful muscular cramps and not to be confused with tetanus of lockjaw, can be cured or greatly relieved by treatment with "A. T. 10," a chemical fraction of irradiated ergosterol or vitamin D, Dr. I. Snapper, professor of medicine and general pathology, University of Amsterdam, reported.

Verification of the fact that the blindness-causing form of the tropical disease, onchocerciasis, is widespread in the Belgian Congo and that about one-third of the wild-flies, regarded as chief carriers of the malady, are infected with the disease was made by a Harvard University expedition under the direction of Dr. Richard P. Strong.

A dietary factor which can prevent hemorrhage of chicks and may be a new hitherto unknown vitamin was found in seeds and cereals by H. Dam of the Biochemical Institute, University of Copenhagen.

Azochloramide, new germicide and disinfectant that kills bacteria without injuring living tissues and does not break down in the presence of organic matter, was announced by Dr. Franz C. Schmelkes and associates of Wallace and Tiernan Research Laboratories, Belleville, N. J.

Complete degeneration of myelin sheath segments of the nerves resulting from strong alcoholic intoxication is permanent, but the slight irritative changes from mild daily intoxication are quickly repaired, Dr. C. C. Speidel, University of Virginia Medical School, learned from observation of frog tadpoles.

The cysts which transmit amebic dysentery can be filtered out of water by the usual filtration methods used to purify water supplies, Dr. Bertha Kaplan Spector, U. S. Public Health Service, and John R. Bayliss and Oscar Gullins, chemist of the Chicago Department of Public Works, found in experiments at the Chicago Experiment Filtration Plant.

Amidopyrine and chemically related headache and pain-relieving remedies are one, if not the sole cause of agranulopenia, fatal bone marrow disease, which has been on the increase in recent years, Drs. F. W. Madison and T. L. Squier, Milwaukee, reported, and research by many other scientists, including Drs. Roy R. Kracke and Francis P. Parker, Emory University, confirmed.

A triumph of obstetric and pediatric practice was the successful delivery and rearing, with every prospect after six months of continued life and health, of the Dionne quintuplets; credit for this medical triumph belongs to Dr. A. R. Dafoe, Canadian "country doctor," who struggled against great odds to save the mother and all the five baby girls.

The $1,000 prize of the American Association for the Advancement of Science was awarded to Prof. Reuben L. Kahn, University of Michigan, for the paper reporting the discovery that when an animal is immunized against disease, its body tissues acquire protective properties as well as its blood.

The outbreak of amebic dysentery starting in Chicago during the fall of 1933 was found by the Chicago City Health Department to be caused by sewage contamination of the water supply of two Chicago hotels.

A new precise method for destroying successive layers of nerve cells from the brain cortex, thus greatly facilitating the study of localization of function, was announced by Dr. Maurice B. Strauss, Thorndike Memorial Laboratory, Boston.

A new rickets-preventive was found in cholesterilene sulfonic acid, chemical relative of vitamin D, Prof. Lester Yoder, Iowa State College and Iowa Agricultural Experiment Station, announced.

*Extracts from Science News Letter and Jour. A. M. A.

Alcoholic neuritis, serious nervous disease resulting in paralysis and often death, is due to lack of food and not to the poisonous effect of the alcohol on the peripheral nerves of the body, Dr. Maurice B. Strauss, Thorndike Memorial Laboratory, Boston, reported.

Scurvy-preventing vitamin C is manufactured in the body of infants up to the age of five months, Paul Rohmar, N. Bezsonoff and Ursula Sanders, of the medical faculty of the University of Strasbourg, reported.

Carotene, yellow coloring matter in plants that is the raw material for vitamin A, was discovered to be abundant in bacteria, by M. A. Ingraham and C. A. Baumann of the University of Wisconsin.

Drs. W. D. Wherry, A. E. O'Neil, and Lee Foshay, of the University of Cincinnati College of Medicine and the Cincinnati General Hospital, recently reported to the American Society of Tropical Medicine that they had restored twenty undulant fever patients to health with the use of a new serum.

Serums and Vaccines

A serum, believed to be the first, that counteracts the effect of the often fatal bite of the black widow spider was perfected by Dr. Fred D'Amour, University of Denver professor.

The venum of an Indian snake, vipera russellii, contains a substance which very rapidly clots both normal and hemophilic blood in the test tube which was successful in checking bleeding after dental and other operations in both normal and hemophilic patients, Dr. R. G. Macfarlane, St. Bartholomew's Hospital, London, and Burgess Barnett, curator of reptiles, Zoological Society of London, reported.

Deaths from peritonitis, often fatal infection following abdominal operations, may be reduced by vaccination with a concentrated fraction of bovine amniotic fluid, Drs. Herbert L. Johnson and Edward L. Young, Boston, announced.

Vaccination against parrot fever or psittacosis was announced by Dr. Thomas M. Rivers, Rockefeller Institute for Medical Research; seven laboratory workers were first to be given this protection which is not considered practicable as yet for the general population.

An anti-influenza horse serum, successful in mice, and a method of using these common laboratory animals for influenza studies were reported by Drs. C. H. Andrewes, P. P. Laidlaw and Wilson Smith, National Institute for Medical Research, London.

Isolation and preparation of the pure substance made by the tubercle bacillus that is responsible for the tuberculin skin test in man and animals was announced by Dr. Florence Seibert, Henry Phipps Institute, Philadelphia.

Progress in the fight against infantile paralysis was marked by reports of successful use in humans of two vaccines against the disease, one developed by Dr. Maurice Brodie of the New York City Health Department and the other by Dr. John A. Kolmer, Temple University Medical School, Philadelphia.

A method of protecting against encephalitis, popularly called "sleeping sickness," but so far applied only to mice, was developed by Drs. Leslie T. Webster and George L. Fite, Rockefeller Institute for Medical Research.

Biology and Chemistry

Within a year scientists expect to be able artificially to create chlorophyl, the substance used by plants for transforming solar into chemical energy. Dr. Paul Rothemund, research fellow of the Kettering Foundation of Antioch College, recently reported to the Academy of Sciences that synthethic production of this substance, the basis of plant life, appears to be only a matter of months.

A new antiseptic, azochloramid, soluble in water and not easily destroyed by heat, was reported to the American Chemical Society by Dr. Franz C. Schmelkes and Henry C. Marks.

Turtles' hearts, frozen in liquid air, resumed beating, in the laboratory of E. A. Wolfe and R. A. Torgeson at the University of Pittsburgh.

Rabbit ova, fertilized outside the mother's body with sperm from a male, then implanted into a second female rabbit, developed as normal embryos and were born normally, in two experiments performed at Harvard by Prof. Gregory Pincus and E. V. Enzmann.

A thermocouple that gives the temperature of air deep in the lungs by measuring the temperature of each breath was devised by Dr. Francis G. Benedict, director of the Boston nutrition laboratory of the Carnegie Institution.

Spectrum analysis of vitamin E, which makes possible the indentification of this food factor by physical measurements as well as by feeding experiments with animals, was accomplished for the first time by Drs. A. J. P. Martin, T. Moore, Marion Schmidt and F. P. Bowden, Dunn Nutritional Laboratory, University of Cambridge, England.

A derivative of morphine, dihydrodesoxymorphine-D, made by Dr. Lyndon F. Small, University of Virginia, was patented and will be manufactured under government license for use on

patients in order to determine whether it is habit-forming like morphine.

New knowledge of how pancreatic enzymes or ferments become active was obtained with the extraction of a new and potent protein-digesting enzyme, chymotrypsin, and a new protein, chymotrypsinogen, by Drs. M. Kunitz and J. H. Northrop, Rockefeller Institute laboratories at Princeton, N. J.

Glands and Hormones

The molecular weight and composition of the sustance in the thyroid gland, the absence of which causes goiter, was determined by Dr. Michel Heidelberger, Columbia University, New York City.

In the posterior pituitary gland a new factor, probably a new hormone, which controls the activity of the acid-secreting cells of the stomach and may therefore be of interest in connection with the production of stomach ulcers, was discovered by Drs. E. C. Dodds, R. L. Nole and E. R. Smith, Courtauld Institute of Biochemistry, London.

A new explanation of the cause of glandular diseases, such as exophthalmic goiter, which suggests revision in the method of threating these diseases, arose from the discovery by Dr. J. B. Collip and associates at McGill University that the body develops resistance to certain hormones after prolonged administration, probably because of the presence of antihormones.

A method for and preliminary results of transplantation of living grafts of thyroid and parathyroid gland tissues in human patients were reported by Drs. Harvey B. Stone, J. C. Owings and George O. Gey, Johns Hopkins Medical School, Baltimore.

Tremendous precocity of growth and development in successive generations of rats as a result of treatment with thymus gland extract and dwarfism in rats as a result of treatment with pineal gland extract, showing that normal stature apparently depends on proper balance between thymus and pineal glands, was obtained by Drs. Leonard G. Rowntree and J. H. Clark of the Philadelphia Institute for Medical Research and Dr. A. M. Hanson, Faribault, Minn.

Success in the treatment of the mental disease, involutional melancholia, by the sex hormone, theelin, was reported by Dr. August A. Werner and associates at St. Louis University Medical School.

Sterility was cured in a significant proportion of human beings by giving to one or other parent an endocrine gland preparation to make up for hormone deficit, the late Dr. Allan Winter Rowe, Evans Memorial Hospital, Boston, reported.

Cortin, live-saving hormone of the adrenal gland cortex, was obtained in pure crystalline form for the first time and its chemical formula discovered, Dr. E. C. Kendall, Mayo Foundation, announced.

Cancer

One of the normal constituents of the body, a bile acid, was transformed by simple chemical means into a cancer-producing substance by Dr. J. W. Cook and associates at the London Free Cancer Hospital under a grant from the International Cancer Research Foundation.

A substance in the kidney excretion of expectant mothers that produced a tenfold decrease in the growth of cancers in mice was discovered by Drs. Henry J. Ullmann, Fritz Bischoll and Richard D. Evans and L. C. Maxwell, chemist, Santa Barbara, Calif., Cottage Hospital, the International Cancer Research Foundation, Philadelphia, announced.

The cancer-producing property of mineral oil is related closely to the oil's refractivity constant, Dr. C. C. Twort and J. W. Twort of the Manchester, Eng., Committee on cancer found; selection of treatment of lubricating oils with this fact in mind may result in lessening of skin cancer among textile workers, known as mule spinners' cancer, they suggested.

Fungous Diseases of the Lungs

(Continued from Page 135)

rests with the laboratory which should be employed soon as possible, if any early diagnosis is to be made.

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Palpation of the Female Pelvic Ureters*

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SANGER in 1885 reported a large number of cases of ureteritis treated for long periods as cystitis, in which he was able to feel a thickened, tender ureter. He was surprised, therefore, that he had not hitherto used palpation of the ureter as part of his vaginal finding. Howard Kelly[1] declared that he could not say too much in favor of this simple method of diagnosis. Stracham and others speak of palpation of the ureters, but no one has described a technique excepting Judd,[2] who feels them behind the broad ligament on the pelvic wall.

In 1920, in a paper[3] read before the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, I said that palpation of the female ureters should be part of every pelvic examination. I also described the technique of their palpation, in front of the broad ligament where they pass over the anterior lateral fornix and anterior vaginal wall to enter the bladder.

The ureter is always thickened if there is disease of the kidneys. Ureteritis and stricture with thickening and infections of the lymphatics of the broad ligaments frequently follow infections of the cervix.

T. Cherry reported cases of ureteritis following cervicitis, with pictures which showed the infected lymphatics around the ureters, causing the ureteritis.

The pelvic ureters are palpable in 95% of patients. They are more easily felt than ovaries, because they are always in the same place, with nothing between the finger and the ureter but the anterior vaginal wall. The ureters can be felt from the bladder to the pelvic brim. At the New York Polyclinic Hospital it was easy to teach students to palpate the ureters, after they had learned to locate their position by inserting ureteral catheters into them.[4]

The ureters are an inch apart in the trigone, about an inch behind the internal urethral opening, and two inches behind the external meatus. They are about two inches apart at their entrance into the bladder, where they run through the bladder wall for about three-quarters of an inch. These points are about half-an-inch in front of the cervix on the anterior vaginal wall, and about an inch from the crossing of the ureter by the uterine artery. After leaving the bladder, the ureters curve over the anterior vaginal wall and lateral fornix to a point half-way between the lateral border of the cervix and the pelvic wall, where they are crossed by the uterine artery on a level with the internal os, about an inch from the lateral border of the cervix, two inches from the ureteral openings.

From the point of crossing, the uterine artery accompanies the ureters for one or two inches through the base of the broad ligament to a point on the pelvic wall just above the spine of the ischium, where they turn upward on the pelvic wall, covered with peritoneum, sometimes in front and sometimes behind the internal iliac to the pelvic brim, where they leave the pelvis through the infundibular pelvic ligament behind the ovarian artery. The right ureter is more often in front of the division of the common iliac, the left one behind it. The ureters are often outlined on the anterior wall by the ureteral ridges. In 1880, Pawlick catheterized the ureters, using the ridges in the vagina as landmarks.

Technique of Palpation

To palpate the ureter from the bladder to the base of the broad ligament, it is necessary to proceed as follows: To orient the position, imagine a line from a point about half-an-inch in front of the cervix to a point half-way between the lateral border of the cervix and the lateral pelvic wall. The point half-an-inch in front of the cervix, where the ureter enters the bladder, varies with the position of the cervix. The point half-way between the lateral border of the cervix and the lateral pelvic wall, is where the uterine artery crosses the cervix and is fixed.

The vaginal fingers are introduced into the anterior lateral vault of the vagina, lateral to the cervix, at the level of the internal os. Counter-pressure is made downward through the abdominal wall. The fingers are drawn forward. As the tissues slip through the fingers, the ureter is palpated as a flattened, cord-like body, smaller than a goose-quill, displaced in its bed of loose

*Prepared especially for THE JOURNAL-LANCET.

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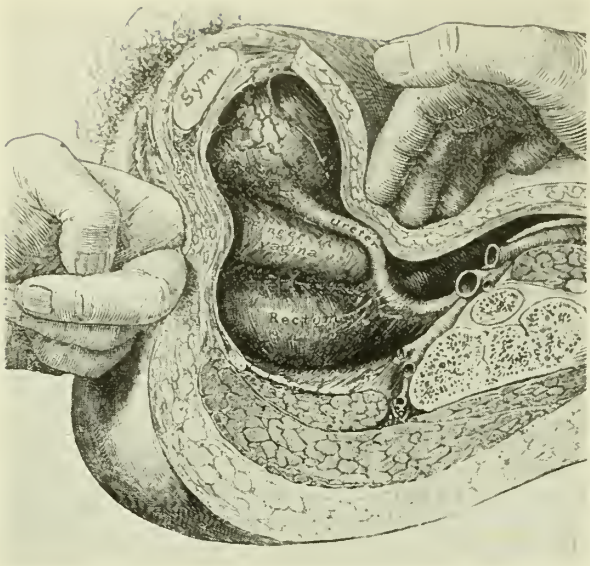


FIGURE 1
Sagittal section of the female pelvis, showing bimanual palpation of the lower end of the ureter.

cellular tissue, as it slips through the fingers. It can be rolled from side to side under the palpating fingers by moving the fingers toward the bladder or toward the broad ligament. The ureter is felt from the bladder to the base of the broad ligament. Posterior to the broad ligament, it is felt just above the spine of the ischium, covered by the peritoneum, to the pelvic brim, by palpating it against the pelvic wall. It may run as high as an inch above the ischial spine. Judd[1] advises sweeping the fingers above its location, bending the fingers as in picking a guitar. In the latter part of pregnancy, the ureters do not follow the pelvic wall to the spines of the ischium, but after accompanying the internal iliac artery, they pass beneath the broad ligament just below the pelvic brim. In advanced pregnancy it is possible to palpate them against the foetal head.

Examination of the Ureter by Rectum

The finger is inserted to the bifurcation of the iliac artery, which is located and traced downward with the tip of the finger. The palpation is done behind, at the side, and in front of the artery. The ureter can be followed in its course until it passes under the broad ligament. The normal ureters, when palpated, never cause pain. If diseased, they are enlarge and thickened from the size of a goose-quill to that of a lead pencil or larger. If they are tender, pressure brings an intense desire to urinate. The tuberculous ureter feels like a string of beads. Calculus, pyelitis, tuberculous kidney, gonorrhea, cervicitis, lacerations, and infections from the cervix cause urethritis, periureteritis and stricture, and because of the nerve plexus of the abdominal sympathetic, pain is diffuse and causes symptoms in adjacent abdominal viscera, bladder, uterus, ovary, appendix, stomach, gall-bladder, and other organs. If irritation passes over the intercostal nerves, pain in the abdominal wall results; if over the lumbar plexus, pain in the lumbar region, in the inguinal, hypogastric plexus, pain in genital regions; over the sacral plexus, pain in external genitals, rectum, thigh, legs; the uterine plexus where the artery crosses the ureter, pain in the uterus; ovarian plexus to the ovaries, gastric to stomach, and mesentery to intestines.

Bladder symptoms following hysterectomy, in which the cystoscope shows a normal bladder, are due to ureteritis, and not to cystitis. Judd and myself both reported a case of early pregnancy with ureteritis and spotting, which was mistaken for ectopic pregnancy. Hunner has reported a large number of strictures of the lower ureter which were mistaken for all sorts of abdominal conditions. The Mayos report that most of the cases of kidney and ureteral stone which they encountered have been mistaken for other abdominal conditions, and the patients operated on for diseases of the stomach, gall-bladder, ovary, or appendix. Kelly[1] states that gonorrhea is a common cause of ureteritis and stricture.

Chronic pyelitis and ureteritis cause stricture of the ureter followed by hydronephrosis, if the condition is not treated. Ureteritis due to lacerations and infections of the cervix, if treated early, will not result in strictures. In patients diagnosed as having various abdominal disorders, palpation of the pelvic ureter indicates that the disease is or is not in the kidney or ureter, and simplifies making the correct diagnosis.

Examples of Cases

Case 1—R. J., aged 35. Since the birth of her child, five years ago, the patient has had pain in the left side of her abdomen and back, which had been very severe at times, and she had also complained of frequent urination, which was painful. She was advised to have her ovaries removed, and had been treated for constipation, cystitis, ulcer of the stomach, and various other things. The examination showed the pelvic organs to be normal, the cervix was lacerated, eroded, and infected. The left ureter was enlarged and very tender; palpation brought intense desire to urinate. The injection of collargol showed the ureter to be slightly dilated just over the bladder, and the kidney pelvis slightly dilated. Pain was relieved after ureteral catheterization and treatment to the cervix.

Case 2—A. G., Aged 60 years, a patient of Dr. Wells; sent to the New York Polyclinic Hospital. Patient complained of acute pain in the right side of the abdomen over the gall-bladder region, which was tender and rigid over the right abdomen. Half a grain of morphine brought only partial relief. An examination showed that the right ureter was enlarged, tender, and very sensitive, and a small stone was felt just above the bladder. Cystoscopic examination showed the right ureteral meatus to be red and swollen, and the catheter was obstructed at 2 cm. above the bladder. An injection of collargol disclosed a small stone in the pelvic ureter, with ureter dilated above it; the kidney pelvis was moderately dilated. The patient was relieved immediately after examination and four days later a stone the size of a shoe button was passed.

Case 3—G., aged 30 years, single. The patient had pain in the right abdomen, suffered from indigestion, and was sent to the hospital to have the appendix removed. Examination showed the pelvic organ to be normal; the right ureter thickened and tender, and pressure brought desire to urinate. Injection of collargol showed stricture just above the bladder, dilatation of the ureter above it, and small hydronephrosis. The patient was cured by dilatation of the ureter.

Case 4—R. S., aged 22 years; married four years, had one child three years old. The patient had had three miscarriages brought on by a midwife; she had been operated on two years previously for gall-stones, and a year later for adhesions of the gall-bladder. She complained of pain in the right abdomen, back-ache, which was worse on walking. She had frequent urination and profuse leucorrhea. Examination showed that the right ureter was enlarged and tender, and palpation brought on a desire to pass urine. The cervix was found to be eroded and infected. Collargol injection showed that the ureter was slightly dilated above the bladder. Treatment of the cervix and the vault of the vagina brought relief.

Case 5—A patient of Dr. Wells, aged 32 years; married, with one child five years old. Last menses had been three months before, at which time she suffered severe pain in the right ovarian region, which was accompanied by spotting. The patient was sent to the Polyclinic Hospital for operation for ectopic pregnancy. Examination showed the uterus to be enlarged, and that she was pregnant for three months. The right ureter was enlarged and very tender, and pressure caused the desire to pass urine. Treatment of the vault of the vagina, urotropin, and lavage of the kidney pelvis brought relief.

Case 6—K., aged 40 years. Patient had fever, chills, and a tumor in the right side of the abdomen, diagnosed by different men as gall-bladder and ovarian cyst. Frequent urination was also present, and at times there were blood clots in the urine. These were attributed by different physicians to an inflamed ureteral meatus. Examination showed that the right ureter was much enlarged and tender, and a cystoscopic examination showed that the bladder was normal, and the right ureteral meatus reddened and contracted. An injection of collargol revealed a soft stone in the kidney pelvis about the size of a plum, which had not been revealed by the X-ray. The large pus kidney with a very soft stone was removed.

Case 7—I. R., aged 25 years; married three years. The patient complained of pain in the right side, which was made worse by walking, of indigestion, and of constipation. The appendix had been removed without giving relief, and the patient was told to have the ovary removed. Examination showed that the right ureter was enlarged and very tender, and the palpation caused an intense desire to pass urine. A small, hard mass, believed to be a stone, was felt at the entrance of the ureter into the bladder. The cystoscope revealed a small, reddish-brown stone sticking out of the ureteral meatus. An X-ray showed that there was a stone half-an-inch long at the entrance to the bladder. A few days later, the X-ray revealed a stone two inches higher up in the ureter. At the first examination it was impossible to dislodge this stone, but upon dilating the ureter, the stone passed.

Case 8—M. K., aged 37 years. Another surgeon operated on the patient two years previously for tubo-ovarian abscess. For the past year, there had been pain in the left kidney and abdomen, frequent urination—every half-hour at night—and the pain had been most severe lately. Examination showed that the uterus was slightly fixed, and the left ureter thickened and tender. Palpation brought on an intense desire to urinate, and there was pain in the left kidney region. Cystoscopy showed that the left meatus was contracted and retracted, and the catheter was obstructed at 6 cm. from the bladder. The ureteral meatus contracted, but no urine passed. An operation was performed, and a small hydronephrotic kidney, lined by thickened membrane, was removed.

(*Continued on Page 143*)

Varicella Following Exposure to Herpes Zoster: Report of Six Cases

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HERPES Zoster has been known for 5000 years,[1] but prior to 1888 no one had thought of linking it with any other condition. In that year, however, Bokay observed that two children who had been exposed to herpes in adults, developed chickenpox. He reported two similar cases in 1892.[2] In 1928, he reported other cases, reviewed his previous ones, and commented on the work of others in the same field.[3] By that time considerable literature had appeared in connection with the two conditions and the varied aspects of their relationship. In Bokay's second paper he arrives at the conclusion that the two diseases have a common origin, a contention supported by the opinions and experiments of Kolmer, Dold, Langer, de Lange, Netter and Urbain, Kundratitz and Lipschutz. Not all the writers have agreed that herpes can cause chickenpox, or vice versa. For instance, Comby regarded such things as pure coincidence.[4]

The bibliography, covering all aspects of the connection between the two conditions, is now quite extensive. The earliest reference in our own literature was in 1905 when Corlett reported on varicella accompanying herpes zoster.[5] In Minnesota the literature contains three references, one by Dr. Riggs in 1922,[6] another by the same author in 1924,[7] and the third by me in 1928.[8] Dr. Riggs and I both reported a case of varicella following exposure to herpes. Previous to Dr. Riggs' first report there were only six references to the subject in American literature.

My discussion of the subject is confined to six cases of varicella in children following exposure to herpes zoster in adults. The publication of these cases is warranted since the circumstances surrounding them are of such a nature as to give them an unusual authenticity, and because the general profession is not aware of the connection which they illustrate.

In presenting these cases I wish to emphasize the absence of any known exposure to varicella. To support my contention of non-exposure let me say that as health officer for 25 years I have seen fully 99 per cent of the contagious cases we have had in that time, that any case attended by another physician has been reported to me, and that hidden cases ultimately come to light through the reports of neighbors. Add to this the fact that our county nurse visits the schools at stated, regular intervals, and that I visit them and examine the children daily on the appearance of any contagion in our midst, and it will be seen that if we *did* have any chickenpox in town I would be very likely to know it. I am stressing this point as proof of the validity of the of the etiology of my cases.

Report of Cases

1. Mr. P. R. B. developed herpes zoster on or about February 26, 1928. Fourteen days later, his only child, a boy of 14, came down with varicella.

2. Mrs. F. T., aged 35, developed herpes of the neck and shoulder on September 18, 1929. On the 30th of the same month, her only child, a girl of two, developed chickenpox.

3. On October 23, 1930, Mrs. F., aged 63, following pain in the right groin which had lasted for three days, exhibited a typical herpetic eruption. Mrs. F. lived with a daughter and two grandchildren, one of whom slept with her. Sixteen days after the grandmother erupted the child who did not sleep with her came down with varicella. Twelve days later the other child developed the same disease.

4. Mrs. Z., aged 64, visited a married daughter and her children in Mankato, Minn. She slept with one of the children. On December 8, 1931, after a few days of pain, she showed a typical herpes zoster. (This information was communicated to me by her doctor). Seventeen days later the child who slept with her came down with varicella, followed in due time by all the other children but one. The local health officer informs me that for a long time prior to, and after the date of the case, no chickenpox was reported in Mankato.

5. On October 4, 1932, C. W., male, aged 70, developed herpes zoster. Eighteen days later, his only grandchild, a boy of six, who lived with him, broke out with chickenpox. While Mr. W. had his herpes he was visited by a woman friend from another town. Five days afterward she, also, had herpes.

6. On or about December 1, 1932, J. F. developed herpes. Because he is tuberculous, Mr.

F. is seldom with his wife and two children. However, on the 19th, he was with them and 13 days later one of the children erupted with chickenpox. The other child, although exposed both to the father and the sister, remained well.

Summary

1. Herpes Zoster, as such, has been known for 5000 years.
2. In 1888 it was found by Bokay, of Hungary, to be capable of causing chickenpox in children.
3. A large mass of evidence has accumulated substantiating this observation.
4. Two such cases have previously been reported in Minnesota.
5. This paper presents a series of six cases including one of those mentioned above.
6. The circumstances connected with these cases have been such as to exclude virtually any possibility of exposure to chickenpox.

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Note: The writer has what he believes to be a complete bibliography on herpes zoster and varicella. This is available to those interested.

Heart Disease

(*Continued from Page 130*)

These declines may reflect the intensified health work with infants, pre-school and school children, which have been carried out in the last ten years.

As regards its distribution by states, it is noted that heart disease is more common in the populated areas such as the New England states along the Atlantic seaboard, and in California, Oklahoma having the lowest rate.

The principal conclusions to be drawn from these charts are that while mortality from heart disease is increasing, and while it is the leading cause of death in America, more than two-thirds of the deaths occur after the age of 60.

While not so serious an economic problem as in the younger age periods, the prevention and alleviation of heart disease in later adult life are becoming one of the difficult problems in the work of the general practitioner. It is hoped that the recognition of earlier symptoms of myocardial impairment, and a better understanding of the physiologic changes underlying the aging process, will bring forth palliative measures and to a certain extent prolong a more comfortable life for the victim of this type of heart disease.

The general practitioner by reason of his first contact with cardiac cases and his familiarity with the habits and history of the patient, is able to detect the earliest signs of disease. It is in this direction that preventive medicine will exercise one of its most important functions.

The historical development of our knowledge of the circulatory system and the diagnosis of heart disease, is of basic import and constitutes the most consequential episode in the general development of medicine.

The treatment of heart disorders is on a much better basis than formerly, and an increasing optimism has gone hand in hand with a better knowledge of the natural history of the disease.

Palpation of the Female Pelvic Ureters

(*Continued from Page 141*)

Case 9—J. M., aged 35 years. Since the birth of her last child, three years ago, the patient had suffered from indigestion, pain over the right kidney, and right abdomen. Frequent and sometimes painful urination was present at times. She was treated for cystitis, and advised to have the appendix removed. Pain in the region of the ovary was present during the menstrual period. Examination showed that the pelvis was normal, and the right ureter enlarged and tender. Palpation caused an intense desire to urinate. The cervix was lacerated, eroded, and infected. The cystoscope showed a normal bladder and collargol injection revealed the ureter to be dilated three inches above the bladder. Treatment was given to the cervix and the vault of the vagina.

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Salute the Old Guard

John S. Sutherland, M.D.
Britton, S. D.

WHEN we try to visualize a medical man of the last generation, or what would now be a practitioner of the "old school," we are apt to see him as an old fashioned party, a little on the Rip Van Winkle order. But if we could have seen him in his prime, or, if we could have been present at one of his gatherings, we would have seen as presentable a looking lot of men, as well dressed and as easy mannered, as you can find anywhere today.

The doctor of that period paid much attention to dress and decorum; he studied politeness, and strove to acquire a good bedside manner. His contact with so many different people made him polished and urbane. It was a sight for the beholder to see one of these immaculate gentlemen of the "old school," on entering the abode of the afflicted, remove his silk hat as if he were unveiling a monument. But times have changed, the old manners have gone and this romantic character has left the scene forever.

These old doctors did not try to educate the public. They rather shrouded their art in mystery. They held their meetings behind closed doors through which sounds of revelry frequently issued. They could sit up all night without getting sleepy as they were accustomed to night work. This had a good affect on the people as it prevented familiarity from breeding contempt for the skill and learning of the doctors. Maybe this was the reason that these old doctors got along so well with the people.

This generation of physicians lived in exciting times; the old order was passing away and the new had not yet arrived. The sister sciences were being focused to illuminate the new science of medicine. Backgrounds were being torn down and new ones being built up. Science was tearing down old structures and erecting new ones. Nevertheless, these old doctors wrote their history by leaving to us a tower of experience that even science cannot demolish.

These were the days before sanitary science and preventive medicine had reached their present developments. These old doctors could tell stories of scourge, pestilence and death which they had to face without the protection of modern science. Many of these epidemics were never even recorded because of the imperfect keeping of vital statistics. These old doctors faced these dangers without bravado and without glory. These shock-proof, old doctors were calm and collected in emergency. They were called to scenes of blood and violence when they had to take command without assistance. They had to retain their equanimity while the bystanders turned pale. This ability to keep their self-possession under trying circumstances made them appear heroes in the eyes of the people and gave to their personalities a glow of romance.

The real doctors of that time were self educated, as the real doctor is today. When the momentum, which the young physician acquires from being shot out of college subsides, he discovers that, if he wishes to sustain his flight, he must resort to self-education.

Professional pride ran high among those old doctors. The fact that there was nothing in their worldly circumstance to distinguish them from the people among whom they practiced, led them to hold high the dignity of their profession—their single claim to distinction. There was no line of promotion along which he might advance. There were no professional honors for him to attain. He was not without influence in the community, and that influence was immense. There were few specialists, and they lived in the cities.

When it looked as if the old doctor had passed his span, a young doctor would come in to take his practice away from him. The patients would then desert the old doctor in a body, unmindful of his self-sacrifice. Having eaten of the bitter fruit of competition, the old doctor was ready to descend into the vale of years, without money, thoroughly disillusioned and with the knowledge that the gratitude of patients was a myth.

The doctor of today does not differ so much from the doctor of yesterday as we might expect. He is better educated and has spent a longer time in school. If we could compare

a composite picture of the two, we would see the same features, the same facial expressions. As the young physician of whatever generation mellows into middle age, his features become stamped with the signet of his calling, a harassed calmness. A similar look may be seen on the faces of rail road conductors when they are driven by responsibility. This is the hallmark of the general practitioner of medicine when he is actively engaged in practice and is annoyed and driven in dealing with a public that is uncertain and hard to please.

The American doctor is charmingly democratic, whether in his office or on the street. He never feels himself better than anybody else. If he happens to be a celebrity in the medical world, he conceals his importance and meets every one on a common level. If, by some necromancy we could have the doctors of today meet the doctors of the "old school," they would find each other very congenial.

The public which we cannot control, which we cannot mould to our liking, or which we cannot impress with our learning are our customers, and it is up to us to get along with them the best way we can. The old doctors in spite of their deficiencies got along with the public very well, and were held in high esteem. We overestimate the intelligence of the masses, so that, when we try to educate them, our propaganda goes over their head. They have not been so thrilled by the test tube and guinea pig experiments of medical science as they have been by the more obvious achievements and electric and mechanical science.

There is a good part of the art of medicine that requires no particular skill or ability. This is the easy part of medical practice, and, paradoxically, it is the part from which the common practitioner derives his best income. Most of this easy part of the art has been chiselled away from us by a certain class of the public. They are now busy trying to chisel away the rest of it. These people wear the garb of charity. With an assumption of medical knowledge, they derive their salaries from public charities and from other sources including the public revenue. These self-appointed guardians of the public health try to sanctify their calling—so as to deter people from examining it for sham and imitation. They like to carry on their activities under a holy name. They get the medical profession to stand between them and the public to absorb any shock that might result from their own inefficiency. Their activities have greatly reduced the amount of paid medical service upon which the general practitioner formerly subsisted. If there is any public education going on along medical lines, they are the ones who are doing it. They are educating the people to expect medical services for nothing. The health of our profession, depends not on the high achievement of medical science, or on the lofty purpose by which we are animated, but on the happiness, comfort and prosperity of its individual members. There is a continuity underlying scientific medical progress that guarantees its advance without regard to economic conditions. But economic conditions determine the happiness of the general practitioner. We have now reached a point where our numbers will have to be greatly reduced so that the common doctor will be able to make a livelihood.

Ten years ago we had twenty-five thousand surplus medical men in the United States according to statistics. Since then the schools have been turning them out in large numbers without regard to consequences. The result is that we have now reached an impassé where it is difficult for a general practitioner of medicine to make a decent living. We are suffering from the degrading effects of over crowding. This condition is far too serious ever to be corrected by the usual namby pamby discussion that goes on in the medical journals. Something very strong and very sensible will have to be done before long or the ship will sink. Our cherished traditions and every thing that is good and noble in our profession are withering in the blast of economic necessity. Their places are being taken by rapacity and greed, by ruthlessness and guile.

Changes will have to be made and young men will have to be prevented from entering a profession for which they have to study eight or ten years, in which there is no line of promotion and in which it is quite impossible to make a living. When a young man takes up the study of medicine, his primary object is to make a living. He must spend years acquiring a stock of knowledge that can be of no value to him unless he can subtilize it by applying it to a practical purpose. It has cost much money and time and often much sacrifice to his family. This knowledge simply serves to cloud his mind until it is forgotten. If he meets with disappointment in his chosen career and wishes to adopt some other business he finds that his mind is no longer young and plastic, that knowledge is not so easily assimilated when he gets older and that he has given the best

years of his life for nothing. It is not kindness to encourage these young men to enter the medical profession.

The most gifted son of the family is the one that is told off for the medical profession. His people pin their hopes on him. His relatives and friends expect too much from him. He is unable to come up to their expectations unless he has some extra-ordinary influence behind him. Even when our young man has cleared the last hurdle, he has many things to learn that the old practitioner knows. He has been told that he will succeed on merit. Merit is all right for the foundation, but there are other qualities more obvious and less substantial than merit that stand for success in dealing with sordid human nature. Our young man's friends and relatives, knowing his talents and opportunities (which are real enough), are mystified to discover that he is not a ball of fire even among his older colleagues who have preceded him into the field of general practice. These young men have imaginations and are often carried away and fired with ambition when they hear us talk about our high ideals.

Ideals, high and otherwise, belong in the realm of metaphysics. This is a kind of science that deals with things that do not exist. Ideals cannot be made to come true with the wolf at the door. It does not strengthen the art of medicine to have a lot of vain fancies woven into its fabric. Moreover, idealism is a stamping ground for hypocrisy. We have nothing to say against those attributes of a high mind which lifts it above selfish considerations.

There is a clamor to bring the old general practitioner back, but he cannot come back. He would not fit in with the times if he did come. His background has been destroyed, and he is a thing of the past.

Time, however, is evolving a new type of general practitioner, who will be no less than the old one. He must at least have a 95 per cent resemblance to his colleague of yesterday, because his functions are the same; he deals with the same unchangeable human nature. He must try to please the same public, which is hard to please, otherwise he will not do well. The manner in which the old practitioner got along with the public was a feather in his cap. At present we try to take the public into our confidence by educating them, but this does not seem to do so well.

We have inspired gentlemen who write for the magazines, who gaze into the future with a prophetic eye. They depict the general practitioner of the future as a visiting physician attached to some clinic or hospital. He will be allowed to give first aid, but will not be allowed to exceed his limitations. He will be competent to give advice in hygiene and preventive medicine. He will play other rôles of a minor part, but will assume little or no responsibility. Such a creature could never fill the shoes of our passing friend, the old country doctor, or the family physician.

The general practitioner is an independent unit in the medical profession. If we take the element of independence away from him, we take, at the same time, his personality and he will be unable to win the confidence of the public.

That the people do not understand us is manifest from the way they write about us in the papers and magazines. They either accuse us of being venal and self-seeking or pay us fulsome flattery and smother us with platitudes. They seem to think that we make our money easily and have lots of it. We cannot see into the future, but we can judge the future from the past and predict that the next generation will regard this generation as old-fashioned.

The medical student of tomorrow will not stop to think where the knowledge he is being taught came from. It may have dropped like manna from heaven as far as he knows. He will not have time to think that it had to be dug up by men of learning and curiosity, belonging to former generations. He has only seen the passing generation when it is in the sere and yellow leaf and will be unable to visualize it when it was young and strong like himself.

Medical Economics in South Dakota*

A. S. Rider, M.D.
Flandreau, S. D.

DR. VAUGHN has asked me to represent our State Society at your meeting. Our President, Dr. MaGee, being unable to come.

There being nothing in my experience to justify my discussing public health affairs, I concluded to talk about some of our economic problems and a possible plan of bettering our state organization. Better organization is our best, and perhaps only means of making our influence felt in matters affecting our common welfare. You are familiar with our problem.

1st. Competition with cultists, quacks, and unlicensed physicians, greatly increased by restrictive laws in neighboring states and our failure to obtain legislation raising our own standards.

2nd. Lack of influence with relief and other bodies dealing with health. Increased lay and political control of medical services.

3rd. Failure to hold the prestige and recognition, political and otherwise, the quality and number of our profession deserves.

4th. The need of a better means of imposing discipline upon unethical and unfit members of our own profession.

5th. Protection from malpractice suits. We are threatened with prohibitive insurance rates and actual withdrawal of risk concerns from the state. It is believed by many that if some doctor is not actually responsible for the beginning of such suits he at least at some time has been in a position to prevent them.

6th. Reduced income, reduced not only in proportion to the general reduction of that of the people of the state at large, but far below that level.

It is plain that unless the income of the whole nation reaches a satisfactory level, physicians cannot be adequately paid. I would, therefore, advise that you interest yourselves in the study of economics. For ages man has struggled to produce insufficient food, scanty clothing, and inadequate shelter. Within our generation the picture has changed. Industrial and agricultural technique has made such strides that abundance is at our door. The recently issued report of the National Survey of Potential Productive Capacity indicates ability to supply an amount of goods and services to every American family equal to $4,700.00 a year at the present cost level. Ours is a generation marvelous in its scientific, industrial, and agricultural progress, and tragic in its social, political, and economic management. We have the problem of managing an economy of plenty instead of one of want. The effort of the AAA to make an artificial scarcity of farm products is the reaction of a bewildered government. That plenty for the individual is good but abundance for all is bad, is certainly strange economic thinking.

Political trends indicate a loosening of party ties and the formation of groups with a common interest or economic belief. Such groups will shift from party to party as their interest directs. In this clash of groups the doctors will be forgotten men should they fail to strengthen their own organization. Perhaps we should think politically as doctors instead of as party men. Perhaps it would be wise to seek means of contact with other professional groups that we may cooperate for mutual benefit. These comments on current economic thought are made to stress the importance of our building up the strongest possible organization by means of which we may play our part and protect our interests during this period of change and readjustment.

But little more than half of the eligible doctors of the state belong to our State Society. When the Society speaks, its right to represent the physicians of the state is questioned. We need a 100 per cent organization. At present we have a State Board of Health appointed by the Governor. We have county Boards of Health with two physicians appointed by the State Board of Health. We have our State Medical Society and its component District Societies. There is no direct relationshhip between the State Board of Health and the State Medical Society or the physicians of the state. It is interesting to study the organization of other groups in the state. Their various features offer possibilities for us.

1st. Let us consider the Bar Association. The lawyers have a 100 per cent organization known as the "integrated bar." This primarily attracted my interest, but upon taking up the matter of organizing the doctors, I was given an opinion by a highly competent attorney that it would not be possible to organize the doctors on similar lines. Lawyers are an integral part of the judicial

*Presented before the Annual Meeting of the South Dakota Health Officers Association, Huron, S. D., November 14, 1934.

branch of our government and as such are subject to a legislative and judicial control that would be wholly unconstitutional were the same limitations sought to be applied to members of other professions. The attorney who was most prominent in organizing the integrated bar has given me a written opinion to that effect.

In 1927 and again in 1931 legislative enactments were secured by which barbers and hair dressers have affected an organization far more competent and comprehensive than our own. They pay a fee of $10.00 for a license, $2.00 for a certificate, and an annual renewal fee of $5.00. These fees are paid to a Board of Barbers which consists of three members appointed by the Governor. The only check on their expenditures consists in the requirement that they report annually to the Governor giving a full statement of receipts and expenditures and of the work done during the year.

The practitioners of cosmetic therapy have a board consisting of four members, one of whom is the Superintendent of the State Board of Health, and three members appointed by the Governor. They pay an examination fee of $10.00 and an annual license fee of $5.00. Their fees are paid to the Secretary of their Board and by him into the State Treasury to create a fund for paying the expenses of the Board and to carry out the purpose of the act.

We have a State Banking Commission, the members of which are appointed by the Governor and selected from a list of names supplied by the State Banking Association. Although this Board is an official body appointed by the Governor, the Governor is limited in his selection to those names which have been approved and furnished by the State Banking Association. I am advised that it would be legally possible to set up similar machinery for our organization by utilizing our State Board of Health as a basis.

These acts afford precedence for the establishment of official machinery which would form a basis for the creation of a State Society supported by annual registration fees paid by all physicians engaged in the practice of medicine in the state and built around our State Board of Health.

The State Board of Health could reasonably be selected from a list of names submitted by the State Medical Society. The group itself would continue as an official body because its membership would finally be selected by the Governor from the list of names furnished by the State Medical Society. The Secretary of the State Board of Health could likewise be the Secretary of the State Medical Society. Every doctor engaged in the practice of medicine would be required to pay an annual license fee. This fee would go into a fund to be used for defraying expenses of the State Medical Society. The details of this would require some legal work but I am advised that it is possible to prepare legislation that would accomplish that purpose. Our State Board of Health would be linked directly with our State Medical Society and it would be impossible for the Governor to select any physician as a member of this board who would not have the approval of the State Medical Society. Annual registration fees from each physician would induce every doctor to take an active interest in the State Medical Society, and automatically make every doctor a member of this society, and it would make the State Board of Health an active unit in our Society. Instead of the State Board of Health which has no direct connection with the State Medical Society we would have a State Board of Health directly responsive to our Society. Restriction of the Governor to a list is needed by the State Medical Society as is the case with the bankers and dentists. It will enable you to exercise some control over the selection of the State Board of Health.

I do not wish to be understood as advocating such a plan of organization at this time. If it offers material for study and consideration my purpose will be achieved.

BOOK NOTICE

THE LIFE OF A WOMAN PIONEER IN MEDICINE

A Child Went Forth, by HELEN MacKNIGHT DOYLE, M.D.; first edition, 364 pages, cloth, library label; New York: Gotham House: 1934. Price, $3.00.

This is a better book than its title would imply. Helen MacKnight was born in Petrolia, Pennsylvania, at some time prior to 1878, to a surly, irresponsible Scotch father and his inevitable counterpart: a gentle and sensitive mother of good native stock. Her father early left his wife and daughter to go to California, where Leland Stanford, the elder Hearst, Crocker, *et al.*, had already seized their boodle.

Little Helen was left with her mother, was finally sent out to a farm in Dakota Territory, left that region to go to California, and began her career on the Coast by entering Toland Hall (now the University of California Medical School at Berkeley) in 1890. Graduating as an M.D., she led a rather happy and uneventful life on the Coast until she finally married Guy P. Doyle, M.D., and set up in practice with him.

Now out of practice, Mrs. Doyle lives at Berkeley with her husband. Her book is pleasant, rambling, and valuable insofar as it tells of the early struggles of women in American medicine.

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DISTURBING ECONOMIC FACTORS

In these days of economic stress, the physician is often confronted with problems among his patients that have arisen from business strife, disappointments and future uncertainty. He is taxed to the utmost to allay their fears. He is called upon over and over again to suggest thoughts that will lighten their heavy hearts and dispel the darkness that environs them. He searches the storehouse of his own hopes and belief for additional messages of comfort. There is but little encouragement in discussing the changing cycle of time with those who are stunned to despair at the most trying period of that cycle. A philosophic view point serves a better purpose. Seneca said *"Non qui parvum habet, sed qui plus cupit pauper est."* In our time, we have passed through the greatest period of material prosperity that the world has ever known; and with it all we became accustomed to want more, more, and ever more without any sane consideration of our actual needs. People must be re-educated to a changed world. They must adjust themselves to present conditions. They must learn to be satisfied for the present with daily requirements. They must be shown that beyond such necessities there is no urgent need. Poverty and wealth are not absolute but comparative terms. "Not he who has little, but he who wants more is poor." A. E. H.

THE A. M. A. AND THE UNITED STATES GOVERNMENT

As everyone knows, the House of Delegates of the American Medical Association was called in special session at the headquarters building in Chicago on February 15 and 16 for the specific purpose of giving attention to the government's published program on Economic Security, with especial reference to such features of it as pertained to the practice of medicine and its economic problems. When this special session was convened, one of its first acts was to appoint a reference committee, composed of Drs. Harry H. Wilson, chairman, California; Warren E. Draper, Virginia; E. F. Cody, Massachusetts; E. H. Cary, Texas; N. B. Van Etten, New York; F. S. Crockett, Indiana, and W. F. Braasch, Minnesota. This committee met and brought in a four-page report, the advance sheets of which are before us. We commend it as an example of moderation and temperate reasoning; a document which can be profitably given to the country at large as a fair statement of the position of organized medicine in this present awkward situation and one to which all of us who are medical men can cheerfully subscribe.

It begins with a short paragraph which states its belief that the "regimentation of the medical profession and lay control of medical practice will be fatal to medical progress and inevitably lower

the quality of medical service now available to the American people, condemns unreservedly all propaganda, legislation or political manipulation leading to these ends." It then gives a terse outline of the organization of the American Medical Association, its relations to the profession and the public and what it has done to bring about improvement of medical service. It reaffirms its opposition to all forms of compulsory sickness insurance no matter by whom administered but makes plain its willingness to help to establish plans to ease the burden of the cost of medical care. It takes cognizance of the preliminary report of the President's Committee on Economic Security, presented to Congress on January 17, agreeing with some of its eleven principles but condemning others, especially those which pertain to the lay control of medical practice in connection with any governmental effort. It considers and criticizes the Wagner Bill and the so-called Epstein Bill, the latter especially containing many vicious provisions which must ultimately lead to disaster if adopted.

Perhaps the most vital part of the whole report, as directly concerns the predicament of the medical profession in its effort to supply adequate service to the indigent and the near-indigent, then follows. It emphasizes the fact that no clear-cut remedy has yet been found. More than 150 plans for medical service are in process of study and trial in various parts of the United States and sufficient time has not as yet elapsed to enable anyone to pass final judgment on their worth. The Bureau of Medical Economics is watching the whole situation very closely and is ready and willing to help medical societies with its advice in such matters. It is the one clearing house we have for such information and as far as it is in a position to do so its help will be freely given and should be utilized. The Reference Committee asks that the Board of Trustees request the Bureau of Medical Economics to continue its efforts and if possible bring in recommendations for plans suited to the needs of all types of communities at the June meeting of the American Medical Association.

The report is a praiseworthy effort and we feel that it goes as far as is warranted at the present time. What we must guard against is anything that promises quick relief based on wrong premises. These difficult times will not last forever and the worst thing we can do while they are with us is to set up any form of machinery which will continue to menace our economic structure after the emergency has passed. God help the practice of medicine and the country, too, if we ever become so regimented that the basic relationship of physician and patient is lost and we have to take orders from the type of people who are now advising the government so glibly on how we should do our stuff. G. C.

SOCIETIES

AMERICAN COLLEGE OF SURGEONS

Minnesota-Wisconsin-North Dakota-South Dakota-Manitoba Sectional Meeting

St. Paul, Minn., March 15, 16 and 17, 1935

Headquarters and Registration at Hotel Lowry

FRIDAY, MARCH 15

Morning

8:00– 9:00—Registration and Information—Foyer Ballroom, Hotel Lowry.

9:00–12:00—Operative clinics, general surgery and the surgical specialties, Ancker, Bethesda, Charles T. Miller, Children's, Midway, Northern Pacific Beneficial Association, St. John's, St. Joseph's, and St. Luke's Hospitals; Gillette State Hospital for Crippled Children, and Mounds Park Sanitarium.

9:30–12:00—Hospital Round Table Conference, Ballroom, Hotel Lowry.

Afternoon

12:30– 2:00—Medical Motion Pictures, Ballroom, Hotel Lowry.

2:30– 5:00—Hospital Conference, for doctors, trustees, superintendents, nurses, and others, Ballroom, Hotel Lowry.

5:00– 5:30—Annual meeting, Fellows of the American College of Surgeons, election of officers for each state and province, Ballroom, Hotel Lowry.

Evening

7:00– 8:00—Medical Motion Pictures, Ramsay County Medical Society Auditorium, Lowry Medical Arts Building.

8:00–10:30—Scientific session, general surgery, Ramsay County Medical Society Auditorium.

8:00–10:30—Scientific session, eye, ear, nose and throat surgery, Spanish Room, Hotel Lowry.

8:00–10:30—Hospital Round Table Conference, Ballroom, Hotel Lowry.

SATURDAY, MARCH 16

Morning

9:00–12:00—Operative clinics, general surgery and the surgical specialties, Ancker, Bethesda, Charles T. Miller, Children's, Midway,

Northern Pacific Beneficial Association, St. John's, St. Joseph's, and St. Luke's Hospitals; Gillette State Hospital for Crippled Children, and Mounds Park Sanitarium.

9:30–12:00—Hospital Conference, Class Room, Nurses' Home, St. Joseph Hospital.

Afternoon

12:30– 2:00—Medical Motion Pictures, Ballroom, Hotel Lowry.

2:30– 5:30—Scientific session, general surgery, Ramsay County Medical Society Auditorium.

2:30– 5:30—Scientific session, eye, ear, nose and throat surgery, Spanish Room, Hotel Lowry.

2:30– 5:00—Hospital Conference, Class Room, Charles T. Miller Hospital.

SUNDAY, MARCH 17

Afternoon

3:00– 5:00—Community Health Meeting, Municipal Auditorium Theater.

Note—Detailed information concerning the various sessions may be obtained from the complete program to be mailed later.

EXTENSION COURSE IN REFRACTION

A month's course in Elementary Refraction, designed especially to appeal to rural medical practitioners who might wish to supplement their general practice in medicine by work in the field of refraction and physiologic optics, will be given April 1 to 28 at the University Medical School under the supervision of the Department of Ophthalmology. The registration will be limited to eight physicians. In addition to formal instruction in refraction, provision has been made to give participating doctors to examine patients at the Wilder Foundation in St. Paul and at the University, Ancker and city outpatient clinics.

The course of instruction has been arranged with the purpose of furnishing sound training in the elements of opthalmology so that the local physician will be enabled to bring to bear some scientific knowledge in diagnosing eye trouble. It is intended that instruction will cover the elementary physiology of vision, physiologic optics and testing and recording vision. The mechanical problems of neutralization of lenses and different methods of determining refractive errors and muscle imbalance will be taken up. The theory of and practice in skioscopy and post-cycloplegic refraction are comprised in the course. Training will also be given in transposition of lenses, prescription writing and practical fitting of spectacles.

The instruction is outlined as follows:

Daily (8:30 to 10:30 a.m.) Demonstrations and teaching of practical refraction and retinoscopy will be conducted daily by instructors at the University and Wilder refraction clinics. The program will be varied somewhat on Saturdays at which time practical work will be given in the fitting of frames and mountings under the supervision of opticians.

Daily (4:30 to 5:30 p.m.) Lectures will be given in a systematic way covering such topics as (1) Elementary refraction (2) Muscle balance and anomalies and fusion training (3) Theory and practice of campimetry and perimetry (4) Ophthalmoscopy and recognition of fundus pathology (5) Practical hints in refraction and prescription writing.

Daily (1:30 to 3:00 p.m.) Out patient clinics will be held at the University, Wilder, and City Hospital eye clinics; and also such operative clinics as may be arranged in conjunction with prevailing schedules.

Instruction, didactic and practical, will be given by the Departmental Staff and members of the Faculty chosen by the Head of the Department for their ability to teach and demonstrate special phases of the subject.

Preference in registration will be given to applicants from rural districts desirous of perfecting themselves in refractive work in conjunction with general practice. It is not the object of those who are formulating this course to develop specialists in ophthalmology in this short period. It is intended rather that this school may provide a training in fundamentals which will enable each participant to continue practical work with patients and ultimately to become proficient in estimation and correction of refractive errors.

The fee for the course of four weeks will be $80.00, $50.00 to be deposited with the application, $30.00 on registration. Applications will not be received after March 10. Reservation fees will not be returned once a place is *held* for any applicant although if a substitute reservation is made, transfer of the application fee may be arranged.

It will be necessary for each participant to furnish his own ophthalmoscope and retinoscope and to provide himself with a text book of refraction. Registrants will be required to devote four weeks of their time exclusively to this course. Only eight men can be accommodated. Further information may be obtained from Dr. R. R. Price, Director of University Extension, University of Minnesota.

NEWS ITEMS

Dr. Martin Aune has been elected chief of staff of St. Barnabas Hospital, Minneapolis.

Dr. C. P. Buzzell, Cleveland, N. D., died at a Bismarck hospital on February 16, the result of a major operation.

Dr. W. J. Mayo, Rochester, has again been appointed a member of the Board of Regents of the University of Minnesota.

Executive offices of the South Dakota Public Health Association, formerly located at Huron, have been moved to Madison.

The Minnesota State Board of Medical Examiners have revoked the license of Dr. James G. Cavanaugh, St. Paul, for the violation of the narcotic law.

Nearly 50,000 children have been immunized against diphtheria and small pox since June 1, 1934, the time when this work was started in South Dakota.

Dr. Chas. T. Granger, Rochester, is writing a serial story entitled, "The Saga of a Country Doctor," for the St. Paul Pioneer Press, which is attracting wide attention.

The Alumnas Association of the Bismarck hospital celebrated their 26th anniversary recently with a fine dinner and a splendid program being presented, with nearly 200 guests present.

Dr. W. A. Coventry, Duluth, president of the Minnesota State Medical Association, was the guest speaker at the February meeting of the Renville County Medical Society at Olivia, Minn.

Dr. A. C. Tanner, who had been in active practice in Minneapolis for the past 20 years, died suddenly on Febuary 13. Dr. Tanner was 60 years of age and a graduate of the Rush Medical College.

At the February meeting of the Sioux Falls Medical Society, two interesting papers were presented: Dr. P. R. Billingsley, one on "Abnormal Uterine Bleeding," and Dr. H. R. Hummer, on "Involution Melancholia."

Dr. C. E. Stackhouse; Bismarck, president of the North Dakota State Medical Association was in Chicago last month where he attended a special meeting of the house of delegates of the American Medical Association.

The American Congress of Physical Therapy will hold its Mid-Western Section meeting at Madison, Wis., on March 12. Programs of the meeting will be mailed, by addressing the secretary, Marion G. Smith, 30 North Michigan Ave., Chicago.

The license of Dr. C. E. May, Minneapolis, has been revoked by the Minnesota State Board of Medical Examiners, as Dr. May is now serving a two year term at the Leavenworth Penitentiary for the crime of harboring and concealing fugitives from justice.

Dr. J. A. Myers, Minneapolis, professor of preventive medicine and public health at the University of Minnesota, gave two talks in Chicago last month. He addressed the thirty-first annual congress of Medical Education, Hospitals and Licensure, and the Chicago Medical Society.

The annual meeting of the Nicollet-LeSueur County Medical Society was held at St. Peter, Minn., last month, when the following officers were elected: Dr. R. J. Gully, St. Peter, president; Dr. J. J. Kolars, LeCenter, vice president, and Dr. Swan Erickson, LeSueur, secretary.

A bill introduced in the North Dakota Legislature proposes to grant to hospitals, supported in whole or in part by private charities and treating persons injured through the negligence of others, liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons because of their injuries.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month will be as follows: March 5, Neurocirculatory Asthenia; March 12, Electric Shock; March 19, Agranulocytosis; March 26, Children's Dentistry.

The largest medical meeting ever held in Minneapolis will take place when the State Medical Association opens its annual meeting on June 24, from the outlook at the present time. Twelve to fifteen of the leading medical men of the U. S. will be present and present papers. The annual meeting of the American Association for the Advancement of Science which is to be held the same week will bring several hundred additional visitors. The demand for space for the scientific demonstrations and exhibits are the largest ever made. The complete program is now being worked out by the various committees and will be ready for mailing at an early date.

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The Diagnosis of Gastric Carcinoma*

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THERE are few more tragic situations than that presented by patients who have inoperable carcinomas of the stomach. The frequency with which these unfortunate patients are seen in clinical practice has led to much doubt about the possibility of early diagnosis, and both laymen and physicians rightly regard the present state of affairs with some discouragement. The note of pessimism sounded by Christian and more recently by Maes and his collaborators is justifiable, but it should not lead to any cessation of effort by those who deal with patients under more favorable circumstances. The observations of these authors were made on patients in large general hospitals, and are not representative of the material seen by the physician in private practice. Maes and his co-workers observed that although little new can be written about gastric carcinoma, that does not mean that of gastric carcinoma much should not be written. This statement furnishes the principal justification for this article, which is presented in the hope of emphasizing the possibilities of early diagnosis.

It is often difficult to convince one's self that progress is really being made in the field of early diagnosis and removal of gastric carcinoma. If the records of the past two decades are examined, it becomes evident that the incidence of resectability is slowly rising, chiefly due to education of the public, an increasing index of suspicion on the part of physicians, more and better roentgenologic examinations of the stomach, and the increasing frequency with which abdominal exploration is performed for digestive disorders which cannot be definitely diagnosed except under direct vision. Friedenwald, in 1914, reported that only 3.3 per cent of malignant gastric lesions were resectable. Eusterman reported that 20 per cent of the lesions in his large series observed from 1918 to 1920 were resectable, and McVicar and Daly found that 25 per cent of more than 2,000 gastric carcinomas were amenable to radical surgical treatment. It is apparent from these figures that much can be done surgically for the patient with gastric carcinoma, provided that the lesion can be detected in the early stages. The average size of resected gastric carcinomas at The Mayo Clinic is about 6 cm. (MacCarty); not many of them could be classified as early lesions, and neither have many of these carcinomas failed to give due warning of their presence.

The reasons for the lateness of diagnosis in the average case have been well stated by Weir and by Alvarez, and are too familiar to warrant prolonged consideration. The first three impediments to earlier diagnosis and treatment are obviously complete lack of knowledge of the etiology of carcinoma, the absence of any specific

*Read before the North Dakota State Medical Association, Fargo, N. D., May 28, 1934.
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serologic tests for its presence, and the relatively high grade of malignancy of gastric neoplasms in general. A fourth hindrance is the late development of symptoms in a considerable number of cases, many patients presenting themselves with lesions obviously of long standing but with digestive complaints of much shorter duration. Perhaps the most serious difficulty arises, however, because of procrastination on the part of the patient, a matter which will be apparent from the material which follows. The last and, perhaps, the most significant hindrance to early diagnosis and treatment, about which something definite can be done, pertains to the physician himself. Most of us carry in our minds the textbook picture of gastric carcinoma, which for all practical purposes is the picture of inoperable carcinoma. It must be recognized that there is nothing specific about the early symptoms of gastric neoplasms, and that the early and operable cases must literally be salvaged from the large number of patients who consult us because of vague and unclassifiable forms of dyspepsia. The early history of individuals who have gastric neoplasms may suggest simple peptic ulcer, cholecystitis, or even appendicitis. In such cases, the physical findings are scanty. Palpable tumors, cachexia, pallor, edema, hematemesis, and similar symptoms are conspicuous by their absence. The gastric acids are likely to be high rather than reduced. At this stage, diagnosis is possible by roentgenologic examination and by that alone.

How early can gastric carcinoma be diagnosed? This question is best answered by reference to two patients on whom operation was performed recently at the clinic.

Case I.—A robust man, in the middle fifties of life, had suffered for about three months from epigastric distress that had come on immediately after meals and had been relieved at times by vomiting. He was in good general condition, and no definite findings could be demonstrated on physical examination. His physician at his home had sensed the possible gravity of the situation, and on roentgenologic examination had found an indeterminate lesion in the vicinity of the pyloric ring, which he correctly preferred to regard as malignant until it had been proved otherwise. Another roentgenologic examination at the clinic gave evidence of the presence of a small annular lesion at the pylorus, which had some of the roentgenologic features of hypertrophy of the pyloric musculature (fig. 1). There was no free hydrochloric acid in the gastric content. Meanwhile the patient had been relieved by ingestion of bland food and sedatives, and it seemed as if medical measures might be continued further, on the assumption that the lesion was benign. Because of the patient's age, the short history, and the indeterminate character of the lesion, exploration was performed. A small carcinoma, confined to the pyloric antrum, was found and was resected (fig.2).

Case II.—A man, of about the same age as the patient in case 1, had suffered for ten years with a duodenal ulcer, the presence of which had been confirmed by roentgenologic examination. About one month before he came to the clinic he had noticed a slight change in the character of his symptoms, and on several occasions had vomited after partaking of large meals. Roentgenologic examination of the stomach revealed an ulcerating prepyloric lesion, which was suspected to be malignant. Free hydrochloric acid was present in the gastric juice, and there was slight retention of gastric content. Because of this retention, the patient was hospitalized and his symptoms completely disappeared under the treatment prescribed for ulcer. The fact that there was a gastric lesion of uncertain nature could not be overlooked, however, and he was finally prevailed on to consent to exploration. A gastric carcinoma somewhat larger than that found in case 1 was encountered, and was resected without difficulty.

These two cases typify the early and resectable type of gastric carcinoma, and are in sharp contrast to the more definite and familiar picture observed in the advanced and hopeless case.

MacCarty recently has reviewed a series of 100 gastric carcinomas taken at random from among those which were the size of a quarter (2.5 cm.), or smaller, and had been removed surgically at the clinic. In none of these patients was there anything to suggest the usual textbook picture of gastric carcinoma, the history and findings in most instances being suggestive of benign rather than of malignant disease. The early detection of these cases, and their successful treatment, can be attributed only to the fact that the patients were submitted to roentgenologic examination, and that in cases in which the lesion could not positively be classified, surgical exploration was advised.

It is hardly necessary to state that such cases by no means constitute a cross section of gastric carcinoma as it is encountered at The Mayo Clinic. In 1933, in approximately 290 cases, the diagnosis of carcinoma was made here; 163 patients underwent various surgical procedures, including exploration, palliative gastro-enterostomy, and resection. In the whole group, only

73 of the lesions were resectable. This gives a rate of resectability of about 25 per cent, based on those cases in which diagnosis was made. A still more accurate and detailed picture of the actual state of affairs is obtained by considering 65 patients with gastric carcinoma who were admitted to the gastro-intestinal service at St. Mary's Hospital in 1933. These were in the nature of a select group of cases, and the majority of the patients were admitted to the hospital for preoperative preparation, only a few being admitted in a condition that constituted an emergency. Eighteen of the patients were women; their average age was about 56 years. Forty-seven of the patients were men, these on the average being about four years older. The youngest patient of the group was a woman, 33 years of age. Five of the patients were 45 years of age or younger. Approximately half of the patients had had symptoms for six months or less, and the lesions of only 11 of them were resectable. Nine of the patients had had symptoms for from six months to a year. In this group, five patients had lesions that were resectable. Nineteen of the patients had had symptoms for more than a year, and of these, six had resectable lesions. In the group as a whole, early lesions were rare, most of the patients presenting the usual textbook picture of gastric carcinoma. Thirty-four patients had definite gastric retention of from 300 to 3,000 c.c.; 18 were definitely anemic, the concentration of hemoglobin being less than 10 gm. per 100 c.c. of blood. Forty-five of the group had palpable abdominal masses. In spite of the advanced stage of the lesions, 23 of the patients had free hydrochloric acid in the gastric content.

The early histories of these patients were interesting. As many observers have noted, six general types of complaint predominated: (1) a so-called typical history of carcinoma, with loss of strength, reduced gastric capacity, and discomfort after eating; (2) a history of ulcer of long or short duration; (3) pyloric obstruction; (4) anemia; (5) a general decline in health without digestive symptoms or nutritional disturbance, and (6) metastasis. After examining the histories of these patients it was easy to see that many of them would be inclined to defer examination because of the vague and inconstant nature of their discomfort, and it was equally easy to imagine some procrastination on the part of their medical advisers. However, no matter how prompt the patient and physician might have been, the lives of certain of the patients with inoperable lesions could not have been saved. For example, of the group of 35 patients whose complaints were of less than six months' duration, 26 had inoperable carcinomas. Of the 13 patients who had nonresectable lesions of more than one year's duration, the lives of the majority could have been saved by more prompt attention and by earlier roentgenologic examination. A few patients had been under observation for anemia and a few had been regarded as suffering from functional indigestion. A numerically important group was comprised of patients who had more or less typical symptoms of peptic ulcer; there were 20 patients in this series whose histories could be so classified. The duration of symptoms ranged from four weeks to four years, with an average duration of about 11 months. A number of these patients had previously received treatment prescribed for ulcer with temporary benefit, a fact which apparently had led to further delay in the recognition of carcinoma. In only five of this group of twenty patients was resection possible.

The frequency of occurrence of symptoms of ulcer among patients who have gastric carcinoma is perhaps not sufficiently appreciated. In the review by Alvarez of a group of physicians who had gastric carcinoma, about a third had the symptoms of benign peptic ulcer. In Maes' series of 200 cases, there were approximately 50 patients who gave a similar history of ulcer-type of dyspepsia; 29 of these had been treated medically for ulcer at various times. Of these, 15 died in hospital with frankly inoperable lesions, and in the remaining 14 cases nothing could be accomplished at the time of exploration. Some of the patients in our series had not had roentgenologic examinations of the stomach, but ulcer had been diagnosed on the basis of clinical symptoms only. In a few, gastric ulcers had been demonstrated roentgenologically, and medical treatment had been advised. It is possible that had all of these patients who had histories of ulcer been examined earlier, small ulcerating lesions of the stomach would have been found. Such individuals raise a question which has been vigorously disputed for many years, the question of whether or not carcinoma arises on a basis of gastric ulcer. In the minds of many, this question is of far less significance than whether gastric ulcer actually can be distinguished from early gastric carcinoma. It is true that identification usually can be made by the roentgenologist, but it must not be forgotten that in McVicar and Daly's series of 507 gastric carcinomas, 30 per cent could not be distinguished positively roentgenologically from benign lesions.

From the roentgenologic standpoint, there are notable differences between ulcerating carcinoma,

in which tumefaction, although not always obvious, is nevertheless demonstrable, and malignant ulcer, in which the element of tumefaction is not apparent, either roentgenologically or macroscopically. In ulcerating carcinoma, however, small tumefaction persists in a degree sufficient to produce a slight elevation of the border around the ulcerous excavation. If a small new growth of this character is situated on the lesser curvature, the encircling ridge is seen, under compression, as a semicircular, clear stripe separating the shadow of the barium-filled crater from that of the stomach. If the lesion is on the posterior wall, the elevated border appears, under pressure, as a transradiant halo around the dense crater. Further, the crater lies in neoplastic tissue and does not project beyond the normal confines of the gastric lumen; it is usually not tender to pressure, and gastrospasm is conspicuously absent. Few ulcerating carcinomas, even those which are exceedingly small, should escape roentgenologic diagnosis. On the other hand, the diagnosis of carcinomatous ulcer is often difficult, for morphologically the lesion is an ulcer without visible evidence of tumefaction. If the niche of what otherwise seems to be a simple ulcer is unduly large, with a diameter of more than 2.5 cm., it will prove usually, but not invariably, to be malignant. When the niche is not unduly large, other marks may suggest malignancy. They include irregularity of the border or base of the crater, effacement or non-convergence of adjoining rugae, absence of gastrospasm and absence of localized tenderness. But a small proportion of what seem roentgenologically to be typical benign ulcers prove on microscopic examination to be malignant. Although some of the early carcinomas of any type will not be discovered or identified, the failures can be held to a minimum by active co-operation of the clinician and the roentgenologist, for either may discover a single suggestive circumstance that will impel the other to more searching re-examination, and thus lead to correct final diagnosis.

It is apparent from the foregoing statements that a considerable number of cases of gastric carcinoma reach the stage of inoperability because of the presence of symptoms of ulcer which were interpreted without roentgenologic examination as being due to a benign lesion. It is hardly necessary to comment on these cases; suffice it to say that a history of dyspepsia caused by ulcer is not specific, and that it always demands roentgenologic investigation. It is equally true that patients known to have benign lesions should be re-examined roentgenologically at regular intervals whether or not there is any change in the character of their symptoms, or progression in the severity of such symptoms. A second group of cases in which the termination may be equally unfortunate is comprised of patients whose gastric lesions have been demonstrated and erroneously regarded as benign. Admitting that identification by means of roentgenologic examination is possible in a large percentage of cases, a group of borderline lesions remains, in which some uncertainty as to the nature of the process may exist. McVicar has stated of such cases that, if the roentgenologist is uncertain, the clinician seldom has information of superior diagnostic worth. The truth of this statement is only too apparent to those who have had experience with lesions in this indeterminate group. The duration of symptoms in the individual case is of little help, since many patients with gastric carcinoma give long antecedent histories of indigestion. The age of the patient is also not significant, since at least 10 per cent of gastric carcinomas are found among patients who are less than forty years of age. The situation of the lesion is important, since it is generally recognized that lesions, particularly small ones, high on the lesser curvature, are less likely to be malignant. Its size does not settle the question, as has been proved by MacCarty's series of 100 carcinomatous ulcers smaller than a quarter (2.5 cm. in diameter). Penetration of the lesion argues against carcinoma, but does not disprove it. So far as gastric acidity is concerned, its determination does not settle the diagnosis. As Comfort's findings have shown, there are a good many cases of gastric carcinoma, particularly those in which the lesions are of the so-called ulcer type, in which hyperacidity and hypersecretion are found.

How should these doubtful cases of ulcerating gastric lesions be treated? It is the usual practice in such cases to treat the patient medically, and if the symptoms respond to medical care and the lesion appears to grow smaller, it is assumed that it is benign. We occasionally have seen very disastrous results from this procedure, particularly among patients who were not willing to remain under observation and to submit to repeated and frequent roentgenologic examinations. In one case at least, both benign and malignant ulcerating lesions occurred. Rivers and Dry, in reviewing the criteria for the benignancy and malignancy of gastric lesions, concluded that the criteria are not, and cannot be, absolutely reliable, and cited cases to prove their contention. They expressed the belief, which many others have held, that it is hazardous to assume that if certain

criteria of benignancy are met, the possibility of neoplasm is excluded. It must not be forgotten that the pathologist is the only person who can absolutely distinguish between benign and malignant gastric lesions, and it must also be emphasized that a history of ulcer, particularly of short duration, of a person past middle age, cannot be taken at its face value.

Comment

The data from our series of patients with carcinoma of the stomach, who were observed in 1933, seem to warrant certain conclusions, most of which have been expressed previously by others, but deserve to be restated because of their clinical importance. It is obvious that our only hope of increasing the rate of resectability of gastric carcinoma lies in the field of roentgenologic examination. The fact that capable surgeons are able to resect 25 per cent of lesions in cases in which there are definite clinical signs of gastric carcinoma would seem to indicate that earlier roentgenologic examination should reveal the presence of at least twice as many resectable lesions. Dyspeptic patients must have their symptoms investigated before the stage of textbook carcinoma is reached. To drift along with temporary measures is to invite disaster. It cannot be too strongly emphasized (1) that it is impossible to distinguish, clinically, early neoplastic lesions from the commoner benign abdominal conditions, without resorting to roentgenologic examination, and (2) that we have no absolute clinical or roentgenologic criteria to prove that an intragastric lesion is benign, even after roentgenologic study. Alvarez has summed up the matter admirably by the following statement: So long as most physicians are willing to treat epigastric pain in older patients expectantly and without consultation with expert roentgenologists, and so long as they are willing to treat gastric ulcer medically without fortnightly roentgenologic supervision, there can be no hope of lessening the mortality from cancer of the stomach. As a general rule to be applied in practice, the statements of Maes and of Crohn may be paraphrased: We must regard as a suspected case of gastric carcinoma, (1) any patient who has indigestion that appears after middle age, (2) any patient who has acute digestive disturbances, superimposed on a more chronic trouble, (3) any patient who suffers from fatigue, anemia, loss of weight, or gastro-intestinal bleeding not adequately explained. A single negative roentgenologic examination should not be relied on to settle the question permanently, and exploratory laparotomy should be urged in cases in which symptoms of carcinoma are present without confirmatory proof. Particular attention should be paid to cases in the so-called ulcer group, both those in which symptoms of ulcer appear suddenly among previously healthy middle-aged people, as well as among patients who have intragastric lesions resembling benign ulcer. The former patients deserve, and should have, repeated examinations until the nature of the dyspepsia is clearly established. The latter patients should be treated with the greatest care, and should be urged to have surgical exploration if there is the slightest doubt with regard to the possibility of malignancy of the lesion. Treatment for ulcer should not be advised for patients who have not had the benefit of thorough roentgenologic examination, and intragastric lesions should not be treated medically unless the patient can be kept under absolute control. In our opinion the principal hope for the early diagnosis of gastric carcinoma lies along these lines. A great deal of time will be required before patients will be willing to submit to roentgenologic examination of the stomach earlier in the course of dyspepsia, but members of the medical profession can at least protect themselves from criticism by regarding all middle-aged dyspeptic patients as "cancer suspects" until proved otherwise.

We may conclude, with MacCarty, that carcinoma does exist as a small lesion, and that it can be recognized in that stage; that the picture of early and resectable gastric carcinoma is not that given in the medical texts, and that the best method of diagnosis is examination by a trained roentgenologist, who although he cannot always be certain of the nature of the lesion, can locate it in the stomach and suggest whether or not it is resectable.

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Volkmann Contracture*

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IN 1875 Volkmann first described this condition which he observed following injuries about the elbow joint. He attributed it to tight splints and bandages, especially plaster casts.

In 1923 Brooks advanced the theory that the condition was caused by a venous stasis that produced a pressure necrosis of the muscles and also believed it to be the result of tight splints and bandages.

Since then the condition has been seen in cases of injured elbows that had never had any splints or bandages applied. It has also been observed that a similar condition sometimes occurs in the leg following injuries about the knee joint.

As a result of observations and studies made by Jones and others on the fracture service of the Massachusetts General Hospital the underlying cause of the condition is much better understood and a very satisfactory method of prevention has been developed.

The condition may be described as a contraction or flexion of the fingers, which appears rapidly, with loss of power in the muscles of the forearm, usually following injury about the elbow in young children.

Pathologically there is an ischemic myositis or necrosis of the muscles of the anterior part of the forearm caused by a severe disturbance of the blood supply. The muscle cells die and are replaced by cicatricial-like tissue.

The cause of the necrosis is probably always due to an interference with the blood supply of the involved muscles and occurs in fractures of the lower end of the humerus, fractures, dislocations and injuries of the elbow and of the upper ends of the radius and ulna. There may be, and probably in most cases if not in fact all cases, injury of the brachial artery. The artery may be caught between the fragments or otherwise compressed. It may be lacerated or torn with resultant hemorrhage. In some cases it has been found to be completely severed. In rare cases thrombosis of the brachial artery may be the cause. In all cases there is hemorrhage and swelling beneath the deep fascia overlying the muscles of the anterior surface of the forearm. As a result of the increased intrafascial pressure the circulation to the muscles is interfered with and the muscle soon dies.

It will be seen from this that external splints and bandages have little, if anything, to do with the cause of the trouble and also how the condition can occur in cases where splints and bandages have not been used.

Injury to the nerves may complicate the condition but have nothing to do with the cause of it. In some cases there may be a concomitant injury to one or more of the nerves, or the nerves may become involved, later in the course of the disease, by constriction in the cicatrical tissue that replaces the necrosed muscle.

The condition manifests itself within two or three days and is characterized by swelling and dusky discoloration of the fingers which are cold. There is little or no pain such as occurs when a limb is too tightly bandaged and sensation is practically normal. Usually a blister will appear on the upper forearm.

The characteristic deformity develops rapidly. The wrist is in a position of extension or hyperextension and the metacarpo-phalangeal joints are also extended while the inter-phalangeal joints are flexed and cannot be extended until the wrist is flexed. The hand is pronated and the forearm is semi-flexed. Supination and pronation of the forearm are impossible. There is wasting of the flexor group of muscles of the forearm. Sensation and electrical reaction are normal.

When the above symptoms occur following an injury about the elbow joint in a young child the diagnosis is established. The condition is differentiated from paralysis due to nerve injury by the rapid onset and the fact that the paralysis and the contracture develop rapidly and synchronously together with the normal sensation and normal electrical response.

In old cases the condition may have to be differentiated from anterior poliomyelitis and other palsies.

Prophylactic treatment is of the greatest importance. The type and location of the injury in a child should put us on guard and early recognition and application of the proper measures will prevent the development of the contracture

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*Read before the Third District Medical Meeting, Madison, S. D., November 8, 1934.

Diagnosis of Intrathoracic Tumors*

C. E. Harris, M.D.†
Woodmen, Colo.

CANCER of the lung is essentially a comparatively new topic, since, in recent years, high authorities expressed doubt that many cases could be diagnosed during life. Recently abundant comment has been made on pulmonary malignancy. For that reason there is no point in categorical enumeration of symptoms or signs. Rather, do we hope, that after various clinicians have presented what they consider the high lights in diagnosis, we may be able by elimination and review to reach sane conclusions. We can hardly do better than call attention to those things which have both hindered and helped us in diagnosis at the Modern Woodmen Sanatorium. The way has not been easy. Some of our results have been not only disappointing but humiliating. Fortunately they have taught us valuable lessons which we believe will be of service in the future.

The picture of malignant lung disease presents more variants than constants. It is beset with contradictions as well as with imitations of other diseases. Polevski asserts that certain signs are well-nigh pathognomonic of lung cancer, e. g., pendulum movement of mediastinum due to atelectasis, see-saw diaphragm due to phrenic nerve palsy. Certain groups of symptoms are highly suggestive. Generally it is a combination of signs and symptoms which leads to proper diagnosis.

It has also been said that history is important. This we have found untrue. The history is so confusing and in many cases so suggestive of other conditions that it has been of little service. This, however, may well be due to the fact that we have not read the history right.

There are certain signs which seem quite dependable. As a preliminary to this, however, I wish to emphasize first and last, two fundamentals, namely: to have the possibility of cancer in mind, and to note that the patient is of cancer age. Since we have nothing actually new to contribute, this paper can only be justified by a better orientation of signs and by placing emphasis where I believe it has frequently been neglected. The case of dulness is in point. Personally, I believe that often there is something distinctive about dulness in malignant tumors. Granting that this will be noted mostly in advanced cases, there still remains, in many instances, a troublesome problem. The writers have not emphasized properly the element of resistance. It is my belief that nowhere else in chest pathology do we find the hard, stony resistance to the percussing finger that is noted in lung cancer. The examiner will do well to forget momentarily the element of pitch, and to think exclusively of the other component, resistance.

Atelectasis is certainly not specific for malignant lung disease. However, it is, to me, a disappointing thing that skilled clinicians have not emphasized the fact that atelectasis without a critical history or surgical intervention should excite strong suspicion in a patient of cancer age. It is not atelectasis alone but chronic insidious atelectasis which needs emphasis.

A large percentage of these patients develop pleural fluid. The rapid recurrence of such fluid, its frequently bloody character, and the failure of the mediastinum to shift markedly after its removal, are oft repeated points. We are advised likewise that skilled pathologists obtain a high percentage of positive results by sedimentation and sectioning. Strangely enough, those who are distinctly my betters have failed almost wholly to note that in many cases such fluids are transudates which can be readily identified as such. While the rule is by no means uniform, we should be definitely on the lookout for fluids which show a specific gravity under 1.018 or over 1.030. When it drops to 1.014 we can practically exclude an inflammatory reaction. How much simpler this is than to depend upon sedimentation alone.

Malignant lung tumors frequently cause paralysis of the recurrent laryngeal nerve. What has not been emphasized is the fact that in patients of cancer age, such a finding is actually more frequent than in those cases caused by inflammatory disease and relatively at least a hundred times more common. It is an anomalous thing, that with the affinity of tubercle bacilli for lymphatic tissue, one's lungs may literally rot away with little prospect that paralysis will result. In fact,

(*Continued on Page 163*)

*Presented before the Rocky Mountain Tuberculosis Conference, Colorado Springs, Colo., September 18, 1934.
†Medical Director, Modern Woodmen Sanatorium.

Diagnosis, Prevention and Treatment of Tuberculosis in the College Age Group*

J. B. Naive, M.D.
Knoxville, Tenn.

THE decline in the general tuberculosis death rate everywhere has been a remarkable thing. In 1900, it was 202 per 100,000 in the Registration Area of the United States; by 1915, the rate had dropped to 146. Figures recently issued from Washington give the rates for 1931 and for 1933 as 62.8 and 59.9 per 100,000, respectively. I wish that it were possible for us to accept these results as a satisfactory reward for work well done, and, for awhile, to take our ease in the fight against the disease. The results, though, are not nearly so good as they seem to be, particularly where certain age groups are concerned. It is the irony of fate that, in the face of this extraordinary fall in the general death rate, comparatively little progress is being made regarding that very class which most concerns this meeting—the college age group.

The death rate in this particular group has not followed the general decline; this is particularly true in the case of young women. In 1931, the rates among young women for the following two groups, ages 20 to 24, and 25 to 29, were 110 and 108, respectively, per 100,000. These rates were about what the general tuberculosis death rate was in 1920. Why the rates for young women are higher than for young men of the same age has never been clearly explained. It is a generally accepted fact, however. Moreover, it is certainly true that the present rates for both sexes in the college age group are abnormally high and that they have failed to show anything like the decline that we should have a perfect right to expect.

Obviously something must be done about such a situation. The general public is becoming thoroughly awakened to the various problems of health and to shortcomings in any health program. As leaders, we are on trial. We must, by some means, carry on our fight against tuberculosis more effectively so far as this group is concerned. Otherwise we shall be discredited, while the present enormous wastage of human lives will continue to go on—lives, too, which are potentially the most valuable asset which our society possesses, to say nothing of other considerations such as blasted hopes and thwarted ambitions.

*Presented before the American Student Health Association, December 27, 1934. New York City.

One of the most logical opportunities possible for such a fight is found in the colleges of our country. Here we have a made-to-order situation in which it should be possible to achieve extraordinary results, and at no unreasonable cost in effort or money. Multiplied thousands of students are coming to us each year, placing their physical well being in our care and looking to us for guidance, eager in practically all instances to follow any worthwhile suggestion that we may make. They spend four years with us and then move on to take their appointed places of leadership in the outside world. They are potential leaders in the crusade against tuberculosis. We face here not only an opportunity; we face a supreme obligation. We owe to them all possible safeguarding of their health, and society expects no less than that of us. The benefits which they receive from us, they will hand on to others, so that, as the years pass, our battle against tuberculosis will be tremendously aided by their ever increasing influence.

In making a survey of the situation, it is perhaps well to attempt an estimate as to how much tuberculosis one may anticipate finding in our colleges. I will approach that in two ways: First, as to infection. The great criterion of tuberculous infection is the tuberculin test. A positive reaction always means that there is at least a latent infection somewhere in the system. Therefore we are particularly interested in the incidence of positive reactions in the college age group. All studies indicate that the percentage of positive reactors is rather high, sometimes very high. Philadelphia studies of a large group of children showed that, at the age of 13 years, 80 per cent reacted to the Mantoux test. Myers and Harrington, in Minneapolis studies, found that, among 2,188 children, aged 6 to 15 years, the percentage of positive reactors was 47. Moss and Chadwick, in Massachusetts, found that among 100,000 school children of all ages, the percentage of positive reactions was 28. In two very brief studies made here, the following results were obtained: Of nearly 200 Knoxville High School students tested, 28 per cent were positive. In Austin High School, colored students furnished 31 per cent of positive reactors among 500 examined. These studies would tend to indicate very definitely that the college age group

includes a large number who would react positively to the tuberculin test, probably as many as 25 to 30 per cent. Just here it must be emphasized that these positive reactors actually harbor a tuberculous infection somewhere, and that they are potential cases of tuberculosis.

Now as to an estimate of the amount of adult tuberculosis of the lungs that is present in the colleges of the country: That is very hard to make because of the fact that so few reliable studies have been made. There are a few, however, and they are very suggestive. One careful study shows the results of examinations made in seven institutions, revealing 262 cases of adult pulmonary tuberculosis among 38,392 students examined, a percentage of 0.67, or a rate of 6.5 per 1,000 studied. Women students showed 0.75 per cent of active cases and men 0.64 per cent. A very interesting study was made in Yale University during the year 1930. Included in the study were 840 freshmen students whose average age was 18 years and 8 months, and 795 graduate students whose average age was 24 years and 10 months. Each student underwent a stereoscopic x-ray examination. Of the younger group, 0.8 per cent were found to have adult pulmonary tuberculosis, and of the graduate students, 3.1 per cent were found to have the disease. During the period from 1925 to 1927, Dr. Henry Chadwick x-rayed a group of 1,199 students in Harvard University and found four cases of adult pulmonary tuberculosis. While all available studies are too incomplete to be conclusive, they seem to indicate that, taking our colleges as a whole, five or six out of every 1,000 of their students have active pulmonary tuberculosis. Actually we have all seen enough of the too familiar tragedies in which tuberculosis reaches into the college ranks for its victims for us to have any doubt on the subject. There must be a very considerable amount of pulmonary tuberculosis in our colleges.

This constitutes a real challenge. Not only are these cases being done a terrible injustice unless they are diagnosed at the earliest possible moment and treated in accordance with the most modern methods available, but, also, a great injustice is being done all the other students with whom they are associated. Many, undoubtedly, acquire the disease through just such contact. In this connection, I wish to give the results of a study which I have made in connection with the work done in the Chest Clinics of the Knoxville Bureau of Health. Of approximately 400 cases which have been diagnosed since 1929, something over 50 per cent gave a definite history of contact. My personal estimate, based upon this particular study, is that the contact case stands something like 25 times as great a chance to develop tuberculosis as does the person who has had no contact with the disease.

Obviously we face a profound responsibility as regards a student with pulmonary tuberculosis. We must diagnose his case and get him under treatment for his own protection, and, since he is a focus of infection, we must put him under a regime of strict control for the protection of his fellow students. That brings up the question of diagnosis, the problem of making the earliest possible diagnosis. The patient's chances to get well are actually multiplied in proportion as the case is diagnosed early. Furthermore, the danger to others is lessened in proportion as the diagnosis is made early.

Diagnosis depends upon three factors: History, physical examination, and laboratory examinations, including the x-ray. In eliciting the history in a suspected case, the question of possible contact should be very carefully entered into, since, as I have said, this factor is so very important. Other things which should be very carefully checked over are as follows: History of pleurisy with effusion, since nearly all of these are tuberculous; a story of loss of weight, appetite and strength without other demonstrable cause; a history of afternoon fever, of a cough that has tended to hang on, or of definite haemoptysis. Any of these call for thorough study and repeated rechecks.

The physical examination is most important and should be done with all possible care. The patient should, of course, be stripped to the waist and the entire chest should be checked over—every square inch of its surface. Limited expansion on one or both sides is suggestive and should be followed up thoroughly; dulness is even more suggestive. Pottenger makes much of hypertonicity of the muscles over an involved area, and I have found this to be an interesting, if not an infallible, sign. I consider that the most important finding is the rale, especially if localized over the upper chest and persisting after cough. Two or three points regarding rales must be noted, however. Very often they can be elicited only after cough; hence, the post-tussive inspiration should be used. Rales heard over the lower lobe do not often indicate a tuberculous lesion; they sometimes do, however, and no basal rale should be ignored. Finally, rales do not constitute a safe criterion of activity for they often persist long after complete healing has taken place.

After all, it usually takes laboratory tests to clinch the diagnosis. I mention, however, only to condemn, waiting for a positive sputum in order to make a diagnosis; for by the time tubercle bacilli are found in the sputum, there has been a definite breaking down of tissue in the lungs, making the healing process much more difficult and recovery definitely more uncertain. The x-ray, on the other hand, is often the means of very early diagnosis, earlier than is possible through the use of any other agency. In my experience, the x-ray has been by far the surest and best aid that I have had. Every suspected case should be x-rayed, and, should the situation not be cleared up at once, x-rayed repeatedly. The value of the x-ray cannot be over emphasized. This means of examination is all but indispensable.

Every suspected case is entitled to painstaking study. A carefully taken history is necessary, and should be the means of pointing, at least, toward a diagnosis. All symptoms should be considered. An absolutely thorough physical examination should be made and this should be repeated again and again if necessary. Finally, a thorough x-ray study should be made, and this may call for repeated pictures. Given such attention as this, the average case of tuberculosis should be diagnosed fairly early.

Once diagnosed, the patient should be promptly put under treatment. No case of tuberculosis has ever been cured by temporizing. The treatment should be carried out under the most favorable conditions possible, and should utilize fully collapse procedures if they are indicated. Obviously this calls for sanatorium care for at least a while if such facilities are available. In any case, the patient should be put under the care of a physician who is well qualified to do this special type of work. Until other arrangements can be made, the patient should be put at complete rest in the college infirmary or in a local hospital. He should, though, be gotten off the campus just as soon as possible.

We have noted the continuing high death rate in the college age group. We have been brought to realize that probably 30 per cent of all college students harbor a latent tuberculous infection, and that perhaps as many as six students out of every 1,000 have active pulmonary tuberculosis. The situation is serious and demands attention. The colleges must do something about it for it is one of their most serious problems.

The diagnostic procedures that have been outlined are relatively adequate in private practice and in clinic work. It seems to me that colleges require something more searching if they are to meet fully their responsibility in the fight against tuberculosis. I would very respectfully suggest some such program as the following.

1. A careful checkup of all suspects with especial reference to those who have been exposed to the disease.

2. Tuberculin testing of all entering students.

3. X-ray study of all positive reactors, same to be repeated each year while student is in college.

4. Prompt segregation and thorough treatment of all active cases.

5. Careful "follow-up" of all cases in which the x-ray shows "healed" lesions, since it is most difficult to know when a lesion is completely healed, and since such cases may break down very suddenly.

Should such a program be carried out, it will almost completely solve the tuberculosis problem so far as the colleges are concerned, and will do it within a very few years. Moreover, it will go far toward the solution of the problem among our people in general.

Our colleges have before them a brilliant array of opportunities, but I question whether any other single one can surpass this tuberculosis challenge. Our young people of college age are facing a terribly unfair handicap. Our college students themselves are exposed to a hazard which is a dreadful thing, but which is completely avoidable, all the result of the ravages of tuberculosis. Colleges do not ignore opportunities; nor do they betray trusts. They will accept this challenge and they will press forward with their best resources in the fight against tuberculosis to the end that our people, in general, and our young people, in particular, may live in greater safety.

Volkmann Contracture

(*Continued from Page 158*)

in the majority of cases. In any case of injury about the elbow joint in which the radial pulse is not felt after reduction immediate operation is indicated.

Fasciotomy: The operation indicated is that of fasciotomy. An incision is made through the skin at the bend of the elbow and extended carefully through the deep fascia avoiding injury to important structures and releasing the pressure on the blood supply to the flexor muscles of the forearm. In the event that the brachial artery is caught in the line of fracture or otherwise injured, it should be taken care of at this time. If it is simply compressed it should be released, if torn it may be sutured and if severed completely

it must be ligated. The incision in the fascia is not closed but the skin incision is sutured without drainage. If this simple operation of fasciotomy is performed early, Volkmann's Paralysis will not occur even in cases where it is necessary to ligate the brachial artery.

Inasmuch as the contracture usually increases for about three months before reaching its maximum, operative treatment designed to correct, improve or relieve the condition should be delayed until the maximum contracture has been established. Such procedures as lengthening of tendons, myomotomy, osteotomy, etc may be tried.

Diagnosis of Intrathoracic Tumors

(*Continued from Page 159*)

it is not the rotting type but rather the cicatrizing pleurisy in the apex that most commonly produces this complication. When one is confronted with a definite picture of inflammatory disease of the thorax associated with paralysis of the larynx, the odds are overwhelmingly in favor of malignant disease.

The position of the mediastinum is important. No uniform rule applies to malignant cases. Either it may be drawn to the affected side or pushed away from it. Retraction to the affected side is based upon atelectasis. This should be confirmed with the extreme negative pressure shown on the manometer. In one case, having proved by aspiration and exploratory operation that there was no fluid in the pleural cavity, it was reasonable to assume that we were dealing with an alveolar tumor which had left the bronchi free but crowded the mediastinum to the opposite side.

The most puzzling groups are those which imitate suppurative lung disease. In no single instance have we been able to make a prompt diagnosis. Two of these cases were definitely missed, although malignancy was suspected and conscientiously searched for. One is confused by a plethora of evidence. Commonly we find signs of grossly thickened pleura or massive consolidation. Recourse to the X-ray plate shows a wide, opaque shadow which makes differentiation of tissues impossible. Most cases show the clubbing of fingers so common with bronchiectasis and lung abscess.

There are several conditions which may cause a broad, opaque shadow, namely: thick pleura, effusion, consolidation, suppurative or nonsuppurative, atelectasis, and malignant infiltration. In general, lung abscess gives a history of critical onset or surgical intervention and dulness is more limited and less intense than that found in malignancy. However, if the patient develops no metastasis in accessible glands and bronchoscopic diagnosis is not established, such cases may prove very puzzling. I have had no experience with the grooved exploratory needle, but can see no objection to its use, providing we establish the presence of an adherent pleura by use of the manometer. No more can we object to exploratory operations under the same conditions. Two of our cases in this group were suspected of malignancy, but definite diagnosis was made only by the surgeon. Much of our trouble in this group has doubtless been due to failure in the past to look for atelectasis.

CASE REPORTS

CONGENITAL EXSTROPHY OF URINARY BLADDER

A. E. Booth, M.D.
Minneapolis, Minn.

I am reporting this case thinking that perhaps the early operations and results may be of interest to the readers.

The baby girl was born at St. Barnabas Hospital, May 7, 1934, with typical exstrophy—the floor of the bladder 4½ c.m. in diameter presenting in the lower abdominal pubic region level with the surrounding parts. The ureteral openings could be found and visualized. Just distal to this a pocket of mucous membrane 1 c.m. in diameter and 2½ c.m. long represented the vagina. X-ray showed the symphysis pubis wider than normal. The child was well nourished and otherwise normal. She was breast-fed for eleven (11) days, then given modified cow's milk because of failure of the mother's milk. The baby made nearly normal progress and in four weeks weighed 8½ pounds—birth weight 8½ pounds.

The baby was referred to me for surgery by the family physician, Dr. R. R. Noice, who also assisted in operations. Immediate operation to transplant the ureters was advised and agreed to by all concerned. Early operation was counseled, first because it would seemingly give the best chance for tissues to accommodate themselves to new function, and second because of the hopeless inferiority complex so often seen in those cases not operated until after they have come to understand their condition. Accordingly on June 2nd, under chloroform anesthesia and through a transverse incision, both urethers were transplanted into the rectum. The method of carrying the ureter through the musculature, then between muscle and mucous membrane for about 2 c.m. before penetrating the mucous membrane was carried out. The ureters were divided close to the bladder wall. The right was transplanted first, rather low and then the left 2 c.m. proximally into the bowel. Merthiolate

1 to 1,000 was used to partially sterile the rectum just before and after each transplantation. The wound was closed with catgut in the usual way with dermal for the skin. A catheter No. 18 was kept in the rectum most of the time for the first 12 hours. After that a catheter was inserted every one or two hours for five days to prevent excess accumulation and distention of the rectum. Recovery was uneventful and healing primary except for area ½ c.m. in diameter just proximal to the bladder in the distal skin lap. It was all healed in two weeks. There was no evidence of shock at any time.

The second operation to remove the mucous membrane with floor of bladder and close the hernia resulting was done July 12th under the same method of anesthesia. The baby stood the operation very nicely and the wound healed by first intention except at the lower end where a small granulating area persisted for about 2½ weeks. Since then the child has done very well. The rectum took on cloacal function much better than expected and retention is now maintained for 2 or 3 hours at a time. The baby appears to be well but has not gained weight as would a normal child. Was discharged July 20th weighing 8½ pounds. When last seen at 7 months of age weight was 11½ pounds. Better feeding than was possible at home would probably have given a greater gain in weight. Final report can be made later.

BOOK NOTICE

THE GENERAL PRACTITIONER'S FRIEND

The Year Book of General Medicine (1934), edited by George F. Dick, M.D.; Lawrason Brown, M.D.; George R. Minot, M.D., S.D.; William B. Castle, M.D., A.M.; William D. Stroud, M.D.; and George B. Eusterman, M.D., Chicago: The Year Book Publishers, Inc.; 843 pages, 1st edition, cloth; $3.00 postpaid.

This is an annual compendium which should bring joy to the heart of almost every physician; but particularly to the heart of the isolated general practitioner. For thirty-four years these year-books in medicine have been coming from the presses with a regularity as unfailing as the famous old *Chatter-boxes* which delighted everyone during childhood Christmas days.

An admirable staff of editors, headed by no less than Nobel prize-winner George R. Minot, of Harvard, George F. Dick, of the University of Chicago, and Lawrason Brown, of Trudeau Sanitorium, have scanned contemporary medical writings for the year 1934, both in domestic journals and foreign publications, sifting out the most salient pieces to form a unified and departmentalized history of medical progress during 1934.

The work is composed of five parts: infectious diseases, diseases of the chest, diseases of the blood and blood-forming organs, diseases of the heart and blood vessels, and diseases of the gastro-intestinal tract. Each part is complete in itself, and reflects the most notable advances of the year in the specific field treated upon.

For the general practitioner, who has neither the time nor the money to expend in poring over the hundreds of medical periodicals published every month; and for the urban specialist, who fears that his reading may become too closely restricted to his own field, *The Year Book of Medicine (1934)* should prove invaluable. It is well worth the modest sum asked for it by the publishers.

CHEMICAL THERAPEUTICS

Hydrochloric Acid and Mineral Therapy, by WALTER BRYANT GUY, M.D.; first edition, keratol, 129 pages: Philadelphia, Pa.: W. Roy Huntsman: 1934. Price $2.00.

The key to the author's theory of medicine as revealed in this volume is contained in these words: "Before going into details, the searcher for therapeutic truth must first of all discard his or her old conceptions of disease and treatment, free his mind from tales of past and exploded theories, stop the treatment of names, and its empiricism . . . "

Further investigation of the volume supports the suspicion that the author's mind has become fixed upon this one (and as yet clinically unproven) theory to the exclusion of other accepted therapeutic measures.

The entire book is based upon conditions arising from what Guy calls "lymph stoppage or stasis." Pursuing this one phenomenon firmly, Guy fails to distinguish logically between the human organism and the biological organism. He cites the case of George Hoffer, of Purdue University, who found that rot diseases of corn were caused by absorption of aluminum salts into the nodes of the plants. He then proceeds to say, " . . . it must be that as in corn life so in human life, the same dynamic laws apply . . . " This is a clear case of critical confusion. Again, he claims that the standard treatments for anemia are woefully inadequate, concluding with, "If potassium deficiency is the underlying cause, such methods must fail until this metal is supplied to the starving organism." A very dangerous statement for anyone to make. The posterior of the volume contains letters of testimonial from several physicians.

Dr. Guy's formula for acid mineral solution is as follows:

Rx Solution of Potass Arsenite
cc. or Grm. 1 or m xv

Solution of Potass Chloride 10%
8. or ʒ ii

Solution of Potassium Sulphate 10%
12. or ʒ iii

Saturated Solution of Silicic Acid in Acid Hydrochloric dilute qs ad.
Grm. 30. or ʒ i

Dose of above well diluted is 5 to 25 drops one to six times daily.

Intravenously: Take of above solution 8 cc. add to water distilled q s cc. 120. Dose 5 cc. to 10 cc. intravenously or intramuscularly.

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HOW TO CHOOSE A LOCATION

It is a recognized fact in chemistry that all true solutions and gases have an equal distribution of their elements throughout the whole. There is some similarity between this law and the distribution of physicians in a community or a state. Not altogether the same of course but it affords an interesting example for speculation never the less. As we look about us we find no physician doing all the work and no one entirely idle. It has been said that it takes all kinds of people to make up a world and this may explain the likes and dislikes that evens out patronage and devotion.

The young graduate whose years of diligent application to book, microscope and test tube, have afforded little time for post graduate planning, must finally decide what he will do next and where he shall "settle down" to practice. Although he seeks guidance, he must choose for himself. It is of first importance to consider the kind of a life he would lead and the kind of a community in which he would live it. There are advantages and disadvantages everywhere but the law of compensation dictates after all a remarkable balance sheet. In a large city his conscientious soul will hesitate to assume responsibility when more experienced men are close at hand. In the country he develops by reason of the responsibility that he can not evade. He develops in a broader sence. When he has won his spurs in the school of diversified experience and inescapable responsibility, then it is time to consider the possible advantages of the city. If he has an ambition to specialize, now is the time to make additional preparation for that, and during his years of general practice he will have had an opportunity to test his adaptability for it. A. E. H.

CONTROL OF HAYFEVER

Research in and clinical study of the diseases caused by inhalation of dusts have been extensively conducted in recent years. There is no evidence that any of the organic dusts cause any permanent damage when inhaled into the bronchial tree. However, if the tissues become sensitive or allergic, the inhalation of dusts may result in such conditions as hayfever and asthma.

Hayfever may involve both the upper and the lower respiratory tracts and is caused by air contaminated with pollens. The diagnosis is easily made through such symptoms as lacrimation, nasal and bronchial discharges, sneezing, etc. The mucous membranes of the nose and throat appear somewhat swollen and injected and the conjunctiva becomes inflamed.

At the earliest possible moment, one should determine which of the pollens are responsible. In most cases, the sufferer is allergic to more than one pollen. Therefore, in each case the testing for allergy should be made as complete as possible. The testing is done by the use of pollen extracts or dried pollens applied to abraded

areas on the surface of the skin or administered intracutaneously. All the pollens known to be in the air at the time the patient has symptoms from hayfever should be employed. In Minnesota, such workers as Ellis and Rosendahl have made a very careful study of the time of pollination of the various trees and plants. This information is essential in determining which pollen is responsible for symptoms. It is true that a patient may be somewhat sensitive to several pollens and yet not all of them will cause symptoms. For example, one may react to oak pollen and ragweed pollen. If in this case hayfever appears only during the time the oaks are pollinating and not when ragweed pollen is in the air, the treatment must be directed against the oak pollen.

The treatment of hayfever consists of attempts to bring about relief from symptoms through nasal sprays, cough sedatives, local eye applications, etc. The removal of the patient to a place where the pollen to which he is sensitive does not exist has been a common practice, but in order to avoid the expense and inconvenience to the patient, attempts are now being successfully carried out to remove the pollen from the atmosphere where he lives and works. Conditioned air is the solution and has proved to be very successful. However, it will be some years before conditioned air plants are installed in the homes and working places of all hayfever sufferers.

Therefore, we are extremely fortunate in having developed a method of desensitizing persons who suffer from hayfever. This is done by administering subcutaneously pollen extracts beginning with extremely small doses several weeks before the hayfever season begins and gradually increasing the amount until a fairly high tolerance is established. This method is known as the pre-seasonal method. Unfortunately, many patients do not present themselves until symptoms have appeared. Even for them, relief may be experienced through the co-seasonal method of administering pollen extracts. Perhaps the best and safest procedure is through the perennial method. This consists of administering pre-seasonal doses about twice a week and continuing through the hayfever season, following which pollen extract is administered at biweekly intervals until approximately three months before the next season begins. At that time, the dose is gradually increased until the season is over.

Excellent results are being obtained by desensitization when the patient has been very carefully studied and the treatments are properly administered. One must constantly keep in mind that the administration of pollen extracts is very dangerous unless the correct dosage is used for each individual case. Very severe reactions and deaths have been reported. Therefore, adrenalin should always be readily available and administered at once when any untoward reaction appears.

Since so many persons suffer from hayfever and there have been so many very recent developments in this field, the physicians in Minnesota are very fortunate in that Dr. R. V. Ellis of the University of Minnesota, an expert in all phases of allergic disease, offers an Extension Course for physicians beginning Tuesday, April 2nd, at 7:30 P. M. All physicians having to deal with hayfever patients will find it very profitable to register for this course through Dr. R. R. Price, Director of the General Extension Division, 402 Administration Building, University of Minnesota. The excellent results of the courses in allergic diseases conducted by Dr. Leon Unger of Northwestern University, Evanston, Illinois, makes the opening of similar courses a matter of general interest. If such work can be extended to all of the states and the physicians will take advantage of the newer knowledge of hayfever control, they can readily relieve large numbers of sufferers from this condition. J. A. M.

A LOCAL RESPONSIBILITY

For many months, through the press, the radio, and various attempted legislation, both state and federal, the medical profession has been forced to realize the gravity of its economic future; and has been stirred to action for its own protection. The writer was privileged to attend the recent special session of the House of Delegates of the American Medical Association in Chicago, and was greatly encouraged by the resolution unanimously adopted by that body; proving conclusively that the great majority of its members are still willing to follow the ideals and ethics which have always guided them in their practice. There was at this meeting a general desire expressed to rid our membership of those who do not support and practice according to those ideals. Of course, such a procedure must be started by our local societies; and upon the unity and strength of our local and state organizations, depends the accomplishment of our national body. The American Medical Association, one hundred thousand strong, can accomplish anything if there is unity of purpose and action—and can not be legislated into disruption.

In North Dakota, due to the untiring efforts of an intelligent Committee on Public Policy, all adverse legislation has been prevented in our present session of the legislature. C. E. S.

DR. GEORGE ALBERT CARPENTER

Another pioneer North Dakotan, Dr. G. A. Carpenter, of Fargo, died in that town on Saturday, February 23, 1935, following a three years' illness. He represented one of the few remaining general practitioners in that state who for many years have been closely and actively identified with its medical affairs and development.

He was born in Monticello, Minn., February 7, 1863, and graduated in medicine from the Minnesota Hospital College, which later affiliated with the University of Minnesota. He first practiced at Marine, Minn., for four and one-half years; then moved to Fargo, N. D., thenceforth his permanent home.

In those earlier years the general practitioner's life was usually an exacting and perilous one, especially as in those trying and dangerous winters, both by day and night, through the agency of buggies or sleighs, many weary miles had to be traversed by the doctor and his team of horses; the distances to be covered were much more than in our present time, since not only more doctors now occupy the territory, but also we now have the aid of the swiftly-moving automobile, thus shortening distance and time. To the recent graduate, the stories of pioneer doctors concerning their mode of life and experiences may seem almost incredible.

Dr. Carpenter was one of the earlier groups of those interested in the development of the American College of Surgeons; and throughout his lifetime he strove to maintain its ethics. He, too, with others in Fargo, was interested in the organization of St. John's Hospital, and he continued a firm friend thereof, remaining on its staff until the time of his retirement from active work in hospitals. One could always find him doing in his modest way, that which he deemed his duty towards the public-at-large. Naturally, he was connected with our county, state and national medical societies; was a member of such organizations as the School Board; director of the Florence Crittenton Home for many years; affiliated with A. O. U. W.; several Masonic Bodies; the First Baptist Church, of Fargo; member of the County Board of Health; the Insanity Board; Chief Medical Director of the A. O. U. W., etc. During the World War he was for a time Captain, located at the Base Hospital in South Carolina; but on account of some physical disability appearing, probably due to his earlier rigorous mode of life in the Dakota medical work—he was honorably discharged, and again resumed his work in Fargo.

He leaves a widow, and a married daughter, Mrs. Rolfe Tainter, also of Fargo.

The funeral was held on Tuesday, February 26, with Rev. Heitmeyer, pastor of the First Baptist Church, officiating. Many citizens were present to show their respect for so faithful a citizen.

We are aware that the public is inclined to believe that physicians, as a whole, are sceptics and fatalists, despite the fact that the doctors continue in their efforts to aid humanity and to help bear the burden of others; this belief of the public also seems to persist despite a somewhat nominal church connection by the doctors. We do not recall Dr. Carpenter ever having talked upon the subject of *theology* as clearly distinguished from the actual practice in religion, yet we have always felt that he was a very clearly-cut type of the family physician described in the Bonnie Brier Bush.

A. W. S.

COMMUNICATION

Editor, Journal-Lancet:

The new plan of medical relief, formulated by South Dakota physicians, shows the reaction to the current trend toward Socialism and the socialization of medicine.

While socialism of medicine may not per se, work a hardship on the medical profession, it is imperative that organized medicine see to it that the rate of compensation is worthy of the time, labor, and expense of gaining a medical education. Socialism, in the form of insurance and corporation or old age pension, is here and confronts the medical profession as a very vital issue today.

The plan, in general, as proposed by the South Dakota State Association, has been discussed in other medical organizations. The plan as suggested calls for an auditing committee of two physicians and one dentist in each county. In general, we might say that dentists and physicians might not care to have their work audited and their patients listed by other doctors and dentist in the same medical organization. We are all licensed and equal in the eyes of the law. It might be better to have the auditing committee consist of the county relief worker, or director, a member of the Board of County Commissioners, a representative of the Red Cross, and possibly one or two other citizens such as a county poor commissioner or a county nurse.

It is assumed, of course, that the consent of the parents, if the patient is a minor, or the

consent of the city officials or county commissioner, is to be secured before medical services are rendered.

The plan, in general, preserves, first; the family doctor-patient relationship which is so essential to independent medical practice. Second: the patient should be allowed to choose the attending doctor. This allows the practicing physician to keep his patients instead of having them turned over to a doctor representing local government or some charitable organization. Third: at the end of the month or any stated period, all physicians render a statement of all work performed at a price governed by a fee schedule. While the remuneration is considerably less than heretofore, it is far better than book accounts and preserves the status quo of medical practice.

It behooves the medical profession to assume control of this situation if they wish to maintain individual practice at a reasonable rate of compensation. C. P. R.

SOCIETIES

THE NORTHWEST REGIONAL MEDICAL CONFERENCE

Physicians of Minnesota and the surrounding states attended two meetings in Saint Paul at the Lowry Hotel on February 23 and 24, 1935. On Saturday, February 23, the county officers' conference of the Minnesota State Medical Association was held, speakers being Harvey T. Sethman, Denver, executive secretary of the Colorado State Medical Society; Dr. Robert L. Parker, Des Moines, secretary of the Iowa State Medical Association, and George Crownhart, executive secretary of the Wisconsin State Medical Association.

The Northwest Regional Medical Conference was opened on Sunday, February 24, by Dr. Philip H. Kreuscher, Chicago. The 100 delegates to the Conference voted unanimously to support the stand of the House of Delegates of the American Medical Association in condemnation of compulsory health insurance subsidized by Federal funds, but also indorsed a system of medical care for the wage earner unable to build up a cash reserve to meet medical emergencies. This subject was discussed by Dr. Eri M. Farr, Billings, Mont.; Dr. Rolland L. Green, Peoria, Ill.; and Dr. Edwin S. Hamilton, Kankakee, Ill. It was noted that both the Wisconsin State Medical Association and the Pennsylvania State Medical Society had issued pamphlets on this subject.

The new plan for co-operation between the State Board of Health of Indiana and the state medical association was presented and explained. Dr. F. J. Savage, Saint Paul, led the discussion on the over-supply of physicians, and various suggestions for relief were advocated. One proposal was that there should be stricter regulations in medical schools prior to the graduation of the medical student, and another was that there should be less impingement of state politics into state universities harboring medical schools. The Conference, however, tabled a resolution asking a restriction in the number of medical students.

Basic science laws were examined and explained by Dr. William G. Magee, Watertown, South Dakota, and Dr. Leonard W. Larson, Bismarck, North Dakota, chairman of the Committee on Public Policy of the state association. Minnesota's basic science law was favorably commented upon, but suggestions were offered for its perfection. It was repeated that the American Medical Association in Chicago is willing to offer legislative aid to state societies in any such cases, but that direct action itself must be made by local groups of physicians.

Dr. Daniel J. Glomset, Des Moines, described the work done in Iowa in providing post-graduate facilities for physicians who wished them. It was carried out by the faculty of the University of Iowa, and also by certain interested private physicians, he declared.

The question of medical exhibits at state meetings was also treated upon. When commercial exhibits are desired, it was shown, the persons or companies who might be interested should be notified early in the fall, with as much description of the meeting as can be given at that early date. Information should include possible grouping, arrangement, space, and location of commercial exhibits, and some indication as to rates.

Dr. Rosco G. Leland, director of the bureau of medical economics of the American Medical Association, told the Conference that the question of adequate medical care had never been satisfactorily decided, and that is would be useless to estimate how much more care is needed now than in other years.

It was decided to hold the next Northwest Regional Medical Conference at Chicago. Dr. Oliver J. Fay, Des Moines, prominent in the Iowa State Medical Association was chosen president, and Dr. Edwin S. Hamilton, Kankakee, Ill., secretary.

Minneapolis Surgical Society

Annual Symposium on Fractures

Held in the Hennepin County Medical Society Auditorium, Tuesday, December 11, 1934, 8 P. M.

1. Dr. Martin Nordland, President:
   Announcements and Introduction of Fracture Committee Chairman.
2. Dr. R. Cranmer, Chairman:
   Introductory Remarks.
3. Dr. Geo. R. Dunn:
   Fractures of the Os Calcis.
4. Dr. R. C. Webb:
   Fractures of the Tibial Plateau.
5. Dr. E. A. Regnier:
   Fractures of the Neck of the Femur.
6. Dr. R. G. Allison (by invitation):
   Pathological Fractures.
7. Dr. A. A. Zierold:
   Newer Methods of Determining the Extent of Brain Injury.
8. Dr. Willard White:
   Results in Fractures of the Spine.
9. Dr. Geo. D. Eitel:
   Fracture—Dislocation of the Shoulder.
10. Dr. Orwood J. Campbell:
    The Treatment of Fractures of Lower End of the Humerus.
11. Dr. Harvey Nelson:
    Fracture Disability Estimation.
12. General Discussion.

F. A. Olson, M.D., *Secretary.*

TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Annual Symposium On Fractures

Tuesday, December 11, 1934, 8:00 p. m.

The President, Dr. Martin Nordland, in the Chair.

Dr. Martin Nordland: As President of the Minneapolis Surgical Society, I wish to welcome you here tonight.

It is evident from the large number present, that our annual Fracture Program appeals to many of the profession. This is the second year that we have devoted one of our eight annual meetings to the consideration of this subject.

The problem presented by the increasing number of fractures is becoming more and more important to surgeons. Our Committee on Fractures has worked hard to prepare a program for you. They have attempted to present the subject in a practical manner. The Committee Chairman, Dr. R. R. Cranmer, deserves a great deal of credit for the effort he has made in building up this program.

The chairman will introduce each speaker and I am very pleased to present Dr. Cranmer who will now preside—Dr. Cranmer.

Dr. R. R. Cranmer (Chairman):

I first wish to welcome the visitors at this meeting and invite and urge that they participate in the discussion of the papers to be read. We have visitors who have traveled many miles to attend, men from South Dakota, Wisconsin and northern Iowa, in addition to all parts of our state. We hope that they will feel the time well spent. The attendance is evidence of the widespread interest in the subject of fractures. This interest is stimulated by several factors both within the profession and outside of the profession.

The first factor is the inherent desire of all physicians to improve their knowledge, realizing the practice of medicine is, in reality, the study of medicine.

Another stimulus is the rapid advances that have been and are continually being made in the treatment of fractures, among which might be mentioned skeletal traction, functional treatment, improved methods of determining proper approximation and advances in operative treatment.

Thirdly, the stress made by the various national medical organizations on fracture treatment, e. g., the American College of Surgeons has had its effect in stimulating interest. Dr. Scudder, who for years was Chairman of the Fracture Committee of the College, has visited most of the clinics of the larger cities of the country and correlated the activity along this line. The effect of his work and that of Speed, Cotton, Boehler of Vienna and many others has been to increase interest in fractures throughout the entire profession.

Fourthly, the increase in malpractice suits based on fracture treatment and the compensation law have had their effect.

Now, because of the lateness of the hour, we will proceed at once to the presentation of the papers, after the completion of which the meeting will be thrown open for general discussion.

TREATMENT OF FRACTURES OF THE OS CALCIS

GEORGE R. DUNN, M.D.

FRACTURES of the os calcis occur quite frequently and are usually due to a fall from a height in which the individual alights on the heels. They may be single or bilateral. These fractures usually result in a prolonged period of immediate disability and a considerable amount of residual disability.

The efficient treatment of fractures of the os calcis, I believe, is definitely handicapped by the fact that the patient, as a rule, does not appreciate the seriousness of the fracture, the prolonged disability which it will cause, and the likelihood of resultant impairment of function. The deformity is not obvious to the patient. He is able to use the foot to a certain extent by stepping on the toes and as a general rule does not feel that the injury has been serious. A large majority of patients would probably refuse to submit to the more radical forms of treatment such as the method advised by Böehler.

Some splitting types of fractures and other more simple forms of fracture of the os calcis require comparatively little treatment except protection from weight bearing and proper support of the feet for early weight bearing. In a vast majority of the cases, however, immediate active treatment is indicated. The most favorable time to treat any fracture would seem to be immediately after the injury and before swelling has developed. A very considerable amount of swelling develops quickly in some fractures of the os calcis and in certain instances where the swelling is already established it is advisable to allow the swelling to subside before proceeding with active treatment.

The results of treatment of fractures of the os calcis are, on the whole, probably good. Some poor results at least are probably attributable to failure to correct the deformity, too long immobilization, and the failure to instigate early movement as we do in other fractures involving joints. The os calcis has multiple articulations and the lateral clearance is comparatively slight. Flattening of the longitudinal arch and eversion of the foot frequently result from improper correction of the deformity. The important steps in the treatment would seem to be:

1. Immediate reduction of the deformity as thoroughly as possible and in event swelling has occurred, the reduction of the deformity as soon as the swelling has subsided.

2. Early movement without weight bearing to prevent excessive callus formation.

3. Use of the foot with proper support when X-ray indicates sufficient union.

In order to effect a proper reduction of the deformity as far as possible, one must carefully evaluate the deformity by manual examination, testing the range of movement in the subastragaloid joint, and by X-ray examination. The X-ray plates should include anteroposterior and lateral views of the foot and ankle and special plates of both os calci.* We notice particularly:

1. Broadening of the os calcis especially beneath the lateral malleolus where this most frequently occurs.

2. Flattening of the contour of the os calcis (the so-called "Tuber-Joint" angle of Böehler).

3. Mal position of the posterior portion of the os calcis.

4. Involvement of the subastragaloid joints in the fracture line and the range of movement permitted at the subastragaloid joint, that is, the lateral movement.

Certain types of fracture of the os calcis have been described but on the whole the variety of fracture occurring is quite variable. Broadening of the os calcis (which usually occurs below the external malleolus) frequently leads to impingement of the os calcis on the external malleolus or on the underlying soft parts. Eversion of the foot becomes painful. It is highly important to correct this deformity. In recent fractures it may be possible to do this under anesthesia by simply molding the bone with the fingers or by the use of the first with the foot resting on a sand bag. In the more difficult cases a mallet with a felt pad over the os calcis may be used or if desired a clamp of the Böehler type. The reduction of this deformity should be sufficient to permit a free range of movement at the subastragaloid joint for one cannot expect more lateral movement to develop at a later date than is obtained at the original reduction. In old cases where union has already occurred and this deformity has not been corrected, it can be relieved somewhat by an operative procedure and removal of a certain portion of the bone. Once the broadening has been reduced, excessive callus formation can be best guarded against by early movement without weight bearing. In many cases of fracture of the os calcis execution of the lateral movement through the full range can be commenced at once.

*Take laterals with the patient lying with the outside of the foot on the plate, then turn the patient on the stomach with both feet together and with the feet dorsally flexed as far as possible, put the casette on the soles of the feet and angle the ray at 50° going through the tendon of Achilles toward the soles of the feet.

In cases where the fracture is badly comminuted a short period of fixation without movement may be desirable, but even in the more severely comminuted cases, movement can frequently be started in ten days or two weekes without weight bearing. Early inversion and eversion of the foot are nearly as important, I believe, in fractures of the os calcis as abduction of the arm is in the treatment of fractures of the tuberosity of the humerus.

Flattening of the os calcis is frequent. This may be corrected in many cases by mere manual manipulation, drawing downward on the posterior portion of the os calcis while pressure is exerted over the sole of the foot either with the hand or some more solid object. Slight flexion of the knee during this procedure tends to relax the tendon of Achilles. In recent fractures where no shortening of the tendon of Achilles has occurred, it has been my experience that there has been very little tendency for the tendon to contract and reproduce the deformity during the short period necessary for early bony union to occur. Slight flexion of the knee during the reduction and during the period of healing is usually sufficient to prevent this complication. In cases where manual correction of this deformity is not possible, tongs may be inserted into the os calcis, the deformity reduced by traction, the tongs removed and a sterile dressing applied. A pin passed through the os calcis or anterior to the insertion of the tendon of Achilles serves the same purpose. Where there is a considerable flattening of the os calcis and a tendency for the deformity to recur, it is sometimes possible after correcting the deformity to gently impact the fracture and thus prevent recurrence. In an occasional case, operative lengthening of the tendon of Achilles may be necessary in order to correct the deformity. In the more difficult cases traction may be applied by passing a pin through the oc calcis or by fixation in plaster with a pin through the os calcis or with two pins as described by Böehler, one through the os calcis and the other through the tibia. There are obvious objections and hazards to inserting a pin through the fractured os calcis.

Position may be maintained by temporary support with plaster, either in the form of a cast or molded splint or in a Pott's splint depending on the seriousness of the fracture. In those cases where early movement is possible a removable support allows the foot to be put through the movements of inversion and eversion several times a day. Movement should be commenced as soon as possible and weight bearing with proper support of the arch when sufficiently firm union has developed.

In fractures of this type, attention must be given to the position of the posterior fragment as lateral or internal angulation may lead to faulty weight bearing, inversion or eversion of the foot. Comparative views of the two bones are of great importance.

An occasional fracture of the os calcis is sufficiently bad to warrant operative exposure and reduction of the fragments and treatment by impaction or other methods of fixation, usually accompanied by lengthening of the tendon of Achilles. In old cases where firm union has been established, the removal of excessive callus especially beneath the external malleolus may be beneficial. In some badly comminuted fractures, immediate subastragaloid arthrodesis is indicated. In a certain group of cases that remain painful with use, obliteration of the subastragaloid joints improves the usefulness of the foot. Radical procedures are, however, not frequently necessary if a reasonably good correction of the deformity is obtained and early movement commenced.

In summary, a few fractures of the os calcis are relatively simple and require comparatively little treatment except protection. Some fractures are sufficiently serious to justify a method as elaborate as the so-called Böehler method, an operative correction, or a subastragaloid arthrodesis. The majority of the fractures, however, will give fairly good results if proper reduction is effected, early movement instigated and proper support provided through the early stages of weight bearing.

FRACTURES OF THE TIBIAL PLATEAU*

R. C. Webb, M.D.
MINNEAPOLIS

FRACTURES in general may be divided into three classes. First, those in which a good result may be expected with conservative treatment and simple equipment; second, those which require special treatment or special equipment in order to obtain a good result; third, those in which a poor result will be obtained regardless of treatment or equipment.

Fractures of this type occur when a person is struck by an automobile bumper at about the knee joint level, by tackling in football and similar trauma about the knee joint, and in falls from height.

*Presented before the Minneapolis Surgical Society (Annual Symposium on Fractures, December 11, 1934.

Hemorrhage into the knee joint always occurs with these fractures. The connective tissue elements surrounding the joint become thickened, adhesions may result in and about the joint, the articular surface of the tibia is widened, and the fragments are forced into abnormal situations. The attachments of the crucial ligaments may be disturbed, the semilunar cartilages may be injured and fragments of bone may become foreign bodies in the knee joint.

The symptoms produced are swelling of the knee joint, pain on motion of the joint and instability and weakness. Diagnosis of a fracture of the upper end of the tibia is easily made in many cases by inspection, but a satisfactory and complete diagnosis can only be made with the X-ray. The diagnostic study of this fracture should be continued with the X-ray until the best possible result has been obtained and is assured. The prognosis in these fractures should always be guarded, but the surgeon should understand that active measures must be carried out to insure a good result. This fracture must be promptly and adequately treated whenever it is found.

The treatment should begin at the earliest possible moment with the application of a Keller-Blake hinged half-ring transportation splint. "Splint 'em where they light." Collins presented a series of cases treated conservatively with fairly good results. Eliason obtained good results in seventy per cent of his cases treated conservatively. Cubbins felt that fifty per cent of the cases required something more than conservative treatment and presented a method of nailing the fragments together. In all cases where the knee joint



FIGURE 1

Fracture of the upper end of the tibia involving the knee joint. The lateral condyle of the tibia has been displaced laterally about one inch beyond the normal position.



FIGURE 2

After operation. Note that the lateral condyle has been restored to its normal position and is being firmly held by the bolt and washers permitting active motion of the knee joint without fear of displacement of the fragments.

is swollen the joint should be aspirated because of the hemarthrosis.

The great tendency toward limitation of motion of the knee joint calls for early motion during the treatment. Fixation of the extremity in plaster must not be used for too long a time even in the slight fractures. A useful joint may eventually be obtained, but the period of convalescence will be unnecessarily prolonged. The application of suspension and adhesive plaster or skeletal traction permitting early motion will bring about good results in many cases.

Skeletal traction by means of a wire through the os calcis and from fifteen to twenty-five pounds of weight as indicated according to the X-ray control of the treatment is very efficient. The extremity can be suspended in a Thomas splint with a Pearson attachment, and the traction ropes may pass over two pulleys at the end of the Pearson attachment. Part of the weight is allowed to hang directly downward and the other rope passes upward and over a pulley directly above on the overhead frame. In this manner the traction is continuous while the patient is exercising the knee joint, and the leg is constantly supported in the hinged Pearson attachment.

We have recently treated five patients with fractures of this type by placing a bolt with washers and nut through the upper end of the tibia from side to side. The bolt is applied by making incisions and drilling through the bone and then inserting the bolt in the drill hole and tightening it under X-ray guidance in the operating room, and then removing the protruding portion of the bolt with a bolt cutter and covering the two ends by closing the incisions. The patient is then returned to bed and placed in suspension as described above with or without traction according to whether or not there is more than a simple splitting of the head of the tibia which would require traction in order to maintain position. Early active and passive motion under the control of the patient is started at once and kept up throughout the treatment. With the fragments firmly bolted in place and alignment of the tibia maintained by traction if necessary, there is nothing to be lost and much to be gained by early motion. Weight bearing is not allowed until the X-ray shows satisfactory healing. In none of our cases has it been necessary to remove the bolt.

The accompanying illustration clearly shows the advantage obtained with the proper use of the bolt.

Conclusions

Fractures of the upper end of the tibia involving the knee joint are potentially serious fractures.

Prompt and accurate replacement of the fragments by either closed or open methods is indicated.

Early motion and late weight-bearing should be the rule in fractures of this type.

When the fracture is severe the bolting of the fragments by open operation affords the simplest open method of retaining the fragments securely in place and permits early motion, thereby assuring increased function and shortening of the period of disability.

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FRACTURES OF THE NECK OF THE FEMUR*

E. A. Regnier, M.D.

THE subject assigned to me well lends itself to periodic reviews. The limited time allotted for this topic permits only a brief outline of the fundamentals in diagnosis and treatment of fresh fractures only.

The Whitman method of treatment has proven so efficacious that it is now recognized by surgeons the world over. Any departure from the Whitman method is usually aimed at shortening the convalescence. Other methods, whether by open operation or internal fixation, accomplish only a reduction and involve much risk.

In the past we have been much concerned with factors which influence bony union, i.e., constitutional disease, age, joint fluid, absorption of bone, etc., to the degree that they have almost become mental hazards. These are all factors to weigh carefully and console one in an hour of adversity but the real crux of the situation is accurate reduction and fixation. Given an accurate reduction and fixation, all fractures should heal.

A. W. George and R. D. Leonard have focused our attention on the importance of lateral views of fractured necks of femurs and this has contributed most valuably to our present treatment. It is the purpose of this presentation to show, by slides of a series of cases at the Minneapolis General Hospital, how lateral views of these fractures have enabled us to obtain much more accurate reduction, better end results and shortened convalescence. Failure of complete and accurate reduction of the neck of a femur can be proved by

*Extracts from paper to be published elsewhere.

lateral views together with stereoscopic anterior posterior views but by neither view alone.

To accomplish a reduction of an intracapsular fracture certain conditions and equipment are necessary. In the first place, the fracture must be recent, in other words, one of not more than a few days old, ten at the most. Secondly, suitable X-rays must be available including a curved cassette; thirdly, proper anesthesia, and fourthly, a Hawley table, plaster, padding and other essentials to insure proper and comfortable fixation.

Our experience has taught us that a low bilateral spica is preferable to the unilateral spica. This plaster is applied from the toes up to and including the pelvis on the fractured side and from the knee on the good side. This type of plaster allows for more freedom of motion of the body and permits the nursing staff to turn the patient or to prop him up almost to a sitting position. This type of plaster immobilization prevents any tilting of the pelvis and still permits much activity for the patient. It is essential that plasters fit quite snugly. In the event of marked muscular atrophy and shrinking of the extremities sufficient to have the cast appear loose, it should be replaced immediately. Many a perfect reduction is lost by an ill-fitting plaster after three or four weeks.

The first maneuver in accomplishing reduction is one of traction in slight abduction and flexion of the hip. Next the thigh is internally rotated. This is the position that most men fail to obtain, i.e., marked internal rotation. In my opinion, a marked degree of internal rotation is just as essential to success as abduction. When asked how much internal rotation to obtain, the best answer is to get as much as possible. Having produced internal rotation and corrected for shortening the thigh is now abducted moderately or more, the hip extended and at this stage an attempt at impaction should be made. This contribution by Cotton is very valuable and should always be tried. Having tried artificial impaction, the fracture is ready for plaster immobilization but before this is done, an X-ray is taken both in the anterior posterior and lateral positions. If the position of the fragments is not as near perfect as it is possible to obtain, the fracture should be re-manipulated until the position is satisfactory. The above described double spica is then applied and the patient returned to bed and heat is applied to dry the plaster.

The after treatment of this type of fracture varies greatly with different surgeons. We have been keeping our cases in plaster for twelve weeks heretofore. During the past year we have run a series of cases which were immobilized a shorter time. In fact we have proven bony union in less than eight weeks in several instances. It is too early to make positive statements but it is my opinion that with our present X-ray checkup as to position of fragments after reduction the period of convalescence will be materially shortened.

An X-ray should be taken every ten days to two weeks while in plaster. Any deviation from the original position calls for correction and change of plaster.

After the plaster is removed every effort must be made to rehabilitate the extremity by physiotherapy, heat, massage and active motion, etc. There should be no weight bearing before the fourth or fifth month and then not without the protection of a well-fitted caliper. The caliper must be accurately fitted and diligently worn for from six to twelve months as the case indicates. According to Phemister, there probably never would be absorption of the head if weight bearing were put off long enough, or what may appear to be a dead head will regenerate if protected from the strain of weight bearing. An ill-fitting caliper is worse than nothing, but, conversely, a properly fitted caliper is almost as useful as a leg and permits solid bone to form while the patient is active. The error with calipers comes from discarding them too soon. We have seen slipping at the fracture site six months after discarding a caliper when the use of it for six to eight weeks longer would have prevented the displacement. Passive motion probably does more harm than good and should never be used.

Summary

Lateral views of fractures of the neck of the femur taken with a curved cassette have greatly added to the proper reduction of these fractures.

Operative treatment accomplishes only a reduction which can be done with more safety by the Whitman method and should be used when the latter method fails.

Given accurate reduction, checked in the anterior posterior and lateral views with proper fixation, all fractures should unite regardless of age, health or condition of the bone.

A series of lantern slides of fractures of the neck of the femur were shown to illustrate various types of fractures before and after reduction.

PATHOLOGICAL FRACTURES

R. G. Allison, M.D.
(By Invitation)

THE term, "pathological fracture" to most of us immediately conveys the idea of either primary or metastatic malignancy of bone. There are, however, numerous types of benign tumors and local and systemic bone disease which result in pathological fractures.

The early recognition of the fact that a given fracture is pathological is of extreme importance for several reasons:

First, that a guarded or unfavorable prognosis may be given if malignancy is the underlying cause.

Second, that appropriate treatment may be carried out when the bone pathology is non-malignant in character.

Third, that in metastatic malignancy the primary tumor be located if possible. From a medico-legal standpoint in liability cases and for the protection of the attending physician or surgeon, in all cases this is of extreme importance.

A great number of pathological fractures are not recognized as such early. The underlying pathology, particularly early metastatic malignancy, is often so slight and so completely masked by the fracture lines as to be indistinguishable on the plates. Whenever the trauma is slight, or not of a type to produce a given fracture, with negative X-ray plates, the prognosis should be guarded and follow-up plates made. The underlying pathology, if slow growing, may not become visible for weeks and sometimes even months later.

Metastatic tumor of bone is often mistaken for primary malignancy. This is particularly true of hyper-nephroma. This is the one malignant tumor above all others which commonly gives a single large bone metastasis resulting in pathological fracture. The location of the primary tumor is often difficult in metastatic malignancy of bone. Some metastases from carcinoma of the breast and practically all metastases from carcinoma of the prostate are recognizable as such on the X-ray plates.

Giant cell tumor, bone cyst, osteomyelitis, Paget's disease, multiple myeloma, all common causes of pathological fracture, usually give typical findings on the X-ray plate.

With the exception of osteomyelitis the occurrence of pathological fracture is generally the first symptom leading to a diagnosis of the above named diseases.

Hyper-parathyroidism is seldom diagnosed until a pathological fracture occurs. The typical X-ray findings with the associated alterations in the calcium and phosphorus metabolism make the diagnosis obvious.

In conclusion, may I recapitulate. A single metastasis resulting in a fracture is usually hypernephroma; second, malignant and benign types of bone pathology usually give typical findings in long bones, but are extremely difficult to differentiate between in the flat bones; third, extensive generalized bone disease is commonly unrecognized until a pathological fracture occurs; fourth, whenever a fracture occurs with little violence and the X-ray shows no underlying pathology, follow-up plates will usually reveal the pathology weeks or even months later.

PROGNOSIS IN FRACTURES OF THE SKULL

Arthur A. Zierold, M.D.

IN CASES of head injury we are not concerned with injury to the scalp nor injury to the bone, but rather in the injury to the brain. We have been accustomed to estimate the extent of brain injury by several various clinical phenomena until a veritable formula has developed which has existed unchanged for a number of years. Recent studies in the clinical behavior of patients with head injury together with studies of the late effects as well as extended and detailed post-mortem examination suggest that some of the signs which we have considered in the past as prima facie evidence of brain damage can no longer be safely considered as such. No new evidence of value has been added in recent years, but there appears to be a general disposition on the part of the profession to revalue the findings in head injuries in order to make a more accurate estimate with regard to prognosis and to form a basis for logical and successful treatment. It goes without saying that the nature of the head injury presents some evidence by which we may in a general way estimate the probability of brain damage. That is to say the presence of skull fracture is of importance inasmuch as it is evident of a severe injury to the cranium and as might be logically expected a severe injury more frequently is followed by brain damage than not. The one outstanding constant and specific evidence of brain dysfunction is unconsciousness. Unconsciousness immediately following a head injury is prima facie evidence of the extensity of brain damage, but not necessarily evidence of the severity of the damage. The length of time over which unconsciousness persists is, however, not only evidence of an extensive brain damage, but is also evidence

of its severity. To make this somewhat clearer it is quite possible to sustain a severe laceration of a portion of the brain without an attended period of unconsciousness. On the other hand it is not possible to have even a minor degree of brain damage without unconsciousness, providing it has involved the greater portion of the brain. At this point it is well to note that unconsciousness itself must be differentiated from aphasia inasmuch as aphasia is evidence of localized cortical damage and is not true unconsciousness. An unconscious individual will not respond in a purposeful manner to any stimulus whereas an individual with an aphasia will respond usually with some purposeful movement. Any irregularity in the period of unconsciousness is not so much evidence of the extent of brain damage as the evidence of recurring hemorrhage and increased intracranial pressure. The best example is the period of unconsciousness following the free interval which obtains in head injury attended by rupture of the middle meningeal artery. The late occurring period of unconsciousness is not evidence of brain damage, but merely evidence of increased intracranial pressure. Delirium and disorientation if persistent and following a period of unconsciousness are usually evidence of extensive brain damage. For a long time vomiting has been considered evidence of brain damage. In my experience vomiting is of no value as an index to brain damage. It occurs as frequently in trivial injuries as it does in severe ones and unless it occurs late in the course of observation it is of no importance. When, however, it does occur late it is not an evidence of brain damage, but rather evidence of sudden increased intracranial pressure. One of the outstanding signs of brain damage with a serious prognosis as to life is incontinence; usually bladder incontinence. When this occurs the outlook is grave. It is usually the evidence of extensive and severe damage to the substance to the brain. In the past the eye signs have been carefully observed and considered of prime importance. This, in the light of recent experience, is only in part true. The pupillary reflexes are of little value in estimating the extent of brain damage. If, however, there is fixation of the eyeball and also fixation of the pupils, this combination of events is usually evidence of extensive brain damage. The degree often depends upon the persistence of these signs. Conjugate deviation of the eyes is usually evidence of localized cortical damage and not the evidence of extensive brain injury although it may appear with hemorrhage into the ventricle. Examination of the fundi is done routinely by many men, but is probably of the least value in determining the extent or severity of brain damage. When papilla edema does occur it is evidence only of increased intracranial pressure which in itself is not evidence of brain damage. Monocular disturbances either of the pupil or of the extra ocular movements are not important signs of brain damage, but rather the evidence of peripheral third or sixth nerve injury. In the past much stress has been laid upon the evidence presented by spinal puncture. The finding of blood in the spinal fluid is common to many cases of head injury and in itself is only evidence of hemorrhage. It is not evidence of severe or extensive brain damage. Likewise, the intraspinal pressure is not a matter of grave concern. It is possible to sustain a severe injury to the brain without this being attended by a marked rise in intraspinal pressure and likewise it is possible to have a trivial injury to the brain attended by a marked rise in intraspinal pressure. Abnormal intraspinal pressure is the evidence of hemorrhage either without the dura or beneath the dura or in the substance of the brain. It is not in itself evidence of brain damage. This is contrary to the usual teaching but is the result of a carefully studied series at the Minneapolis General Hospital and is the opinion of several men such as Richie, of London, Connors, of New York, and others. It is also the custom to make careful and persistent studies of the pulse and blood pressure. Examination of a large number of records carefully made following head injury shows that variations in pulse and blood pressure are not evidences of brain damage, but rather evidence of intracranial pressure. Furthermore it is only when the intracranial pressure approximates that of the blood pressure that there is any marked and definite change in the pulse rate or in the blood pressure. This occurs in our experience in only about one or two per cent of the cases. The terminal rise of pulse and drop of blood pressure is the evidence of impending death which is common not only to brain damage resulting from head injury, but also to the nervous exhaustion terminating other diseases. Inasmuch as it occurs only a short time before death and is really part of the terminal state it cannot be considered as one of the early signs in estimating brain damage.

Alterations in the respiratory rate and depth are of a great deal of value as evidence of medullary damage particularly in the absence of increased intraspinal pressure. Of the clinical signs which may have to be obtained from examination of a chart respiratory disturbances may be taken as evidence of serious brain damage. This is particularly true if cyanosis is present. This is also

true with regard to the temperature. A marked and persistent rise of temperature is one of the best signs of extensive brain damage. This is usually attendant upon hemorrhage into the substance or hemorrhage into the ventricle. The neuromuscular signs such as paralysis, spasticity and disturbed reflexes present little of value directly following a head injury. At this time these cannot be taken as evidence of the extent or severity of the brain damage. After a lapse of several days the persistence of paralysis or spasticity is of considerable value as evidence of localized brain damage. Briefly then, the outstanding criteria in the estimate of brain damage are: Unconsciousness, incontinence, respiratory irregularity and persistent fever.

FRACTURED VERTEBRAE

W. D. White, M.D.

FRACTURES of the spine are of importance for two reasons: First, because of the effect the injury may have on the spine as a supporting structure, and second, because of possible injury to the spinal cord. You will recall that the spinal cord is protected by the bony ring of the vertebrae, by dura and by the cerebrospinal fluid.

It is self-evident that as results depend on correct treatment, recognition of the lesion is of paramount importance. Hence it is advisable to emphasize again and again the need for examination of the spine after an accident. This is true not only when direct blows to the spinal column have occurred and spinal injury is apparent but also after which might appear to be a less serious accident, or when less direct injury to the spine seems evident. I refer to such incidents as falls upon the buttocks, objects falling on the head or shoulders when the body is in a bent-over position, etc. Associated injury may obsorb so much attention that a fracture of the vertebrae may be overlooked. This has been known to occur when a patient is hit by an object, receiving a fracture of the neck of the femur. That injury being apparent and serious, requires considerable attention and a compression fracture of the vertebrae may be overlooked.

Fractures With Cord Injury

Fortunately, injury to the cord is frequently easily recognized by the presence of areas of anesthesia, muscle paralysis and other features of nerve trauma.

Practically all clinicians agree that injury to the cervical spine is very apt to be associated with cord injury and that the mortality in these cases is high. Moreover, the injuries to the cervical spine as a group constitute a large percentage of the fatal cases. Simon[1] reported during a certain period there were 130 cases of injury to the vertebrae and 51 (37.6 per cent) of these were to the cervical vertebrae, and of these 27 had cord involvement. Of these 27 cases, 22, or 81.5 per cent died. Kessler[2] points out that above the level of the fourth cervical vertebrae injury is usually fatal either immediately or within six days. He further states:

"*Below the fourth cervical vertebrae*, lesions of the fourth to the eighth cervical vertebra involve the upper extremity. If not fatal the paralysis or sensory disturbances that result from the cord lesion may be appraised after an intervening period of six to eight months on the basis of the physiological composition of that extremity, viz., loss of motion, strength and co-ordination.

"Injuries to the cord in the dorsal region may result in paralysis of the abdominal muscles, bladder, rectum and both lower extremities.

"Lesions below the first lumbar vertebra cause injury to the cauda equina with paralysis of feet and peronei, loss of sphincter control and anesthesia of the buttocks and genitals."

Fractures Without Cord Injuries

Fracture may occur to the neural arches, articular facets, transverse processes and spinous processes. Fracture of the neural arches, the articular processes and the spinous processes generally occur from direct violence and cord injury may or may not complicate.

Fractures of the transverse processes may occur as a result of indirect violence and more particularly to muscular action or force and occurs most frequently in the lumbar region. If not associated with other fractures the incapacity is usually only temporary. It is wise not to emphasize the importance of this fracture to the patient and not to speak of it as a broken back. Many of these cases may be treated ambulatorily. Determination of the prognosis in this type of injury will be influenced by such factors as age, general condition of patient, etc.

Fractures of the Vertebral Bodies

We are especially concerned with treatment and results of fractures of the bodies of the vertebrae. It is in this group of cases where there may be the greatest difference of opinion. There has been some tendency to modify the classical treatment.

In the cervical region cord injury is apt to be present. If it is not the deformity may be cor-

rected by manipulation and traction followed by immobilization and support.

In the thoracic region the final result often is greatly influenced by early recognition and treatment. Davis[3] in 1925 emphasized the importance of reducing the compression by manipulation. For this the patient was anesthetized, placed on a table with his face down, the ankles are padded and a rope placed around the ankles and the legs raised towards the ceiling by means of this rope and a pulley, thus hyperextending the back. At the same time pressure can be applied to the site of fracture. A plaster jacket is then applied and the corrected position thereby maintained. Other maneuvers have been utilized to accomplish this reduction of compression by hyperextension.

Jones,[4] of Liverpool, administers a sedative hypodermically but no anesthetic is given. The patient is placed face downward with his thighs resting on one table and arms and shoulders on another slightly higher table. The body sags between the table and hyperextension results. A plaster jacket is then applied around the hips and well up on to the trunk. Other men have described other procedures such as placing the patient's back across a sheet held between two men and allowing the weight of the extremities of the body to bend the spine backwards. I believe most men who attempt to treat these fractures will agree as to the advisability of reduction of the compression. There is, however, quite a wide variation in the opinions of these men as to the length of time the back should be immobilized and there are other differences in the management. Many surgeons follow the plan of having the patient wear a plaster cast for three months, a brace of the Tayler type three months, day and night, for the next three months the brace is worn daytime only, and then it is discarded. The patient returns to work usually at the end of a year from the time of the injury. There is now a great tendency to modify this plan as just stated. It is quite possible that where a compression is well reduced by some such procedure as mentioned above, a cast could be safely removed at an earlier date. Some men, including Watson Jones,[4] allow an individual with a compression fracture of a dorsal or lumbar body which has been reduced, to be up and about in approximately ten days, provided a snugly fitting jacket is worn. The plaster is worn for four months. A light brace is used following its removal and the patient may be allowed to return to work in six months. Jones reported seven cases of recent fracture treated by this method. In one of these the fracture had occurred three and one-half weeks previously and was complicated by paraplegia and urinary tract infection. This patient died of uremia four weeks later. In the other six cases reduction was completely successful. Anatomical reposition of the compressed vertebra was secured, with a normal range of movement.

H. E. Mock,[5] of Chicago, reduces the compression fracture gradually by hyperextending the patient on an adjustable Bradford frame, employing opiates for a few days as necessary. He uses a plan whereby a patient is turned over on the abdomen for a short time each day after the fourth day. The back is kept hyperextended. Physiotherapy in the form of heat and gentle massage is begun at once. The plaster jacket is applied at the end of three weeks and is removed at the end of eight weeks from the date of injury. He claims most of his patients return to work in from 12 to 16 weeks. He is very insistent that no brace be used. He uses heat and massage and exercises before and after the cast is applied. He emphasizes the fact that the spine is made up of numerous joints and two large sacroiliac joints adjacent to it, and that immobilization of these joints is very apt to cause stiffness with subsequent disability.

The condition known clinically as Kümmel's disease, which is an aseptic necrosis of cancellous bone, may follow back injury. It is the fear of this change that has frequently caused surgeons to use prolonged immobilization. This condition, however, is rare.

There is good reason to believe that, if a compression fracture of the body of a vertebra is recognized and treated with proper and sufficient immobilization, aseptic necrosis or Kümmel's disease will not follow. As Jones[4] points out, a slight compression may occur and be shown in X-ray. It is reduced and there may be great difficulty in demonstrating the injury in a post-reduction radiogram. Therefore, a compression of the cancellous bone may occur and be reduced by manipulation or otherwise. An X-ray examination is made and no fracture is found. The individual is not given support to his back; he continued to complain of pain. He is X-rayed again later and an area of necrosis is found and Kümmel's disease is said to have developed. The belief is becoming more widespread that if the compression is corrected a shorter time of immobilization may be allowed.

Conclusions

A summary of the situation may be stated somewhat as follows:

Given a compression of a body of a dorsal or

lumbar vertebra, early ambulatory treatment may be allowed if two conditions are fulfilled:

1. Complete correction of the compression.

2. Adequate support, i.e., immobilization by means of a properly fitting plaster jacket which maintains the hyperextension.

The length of time necessary to wear the plaster jacket may vary with different patients but it is my opinion that with compression to any degree about four months support is required. This agrees with the teaching of Watson Jones. Jones would also prescribe a brace for about two months. Mock, of Chicago, would have his patients wear the plaster about half that time and use no brace.

In further conclusion I wish to say that I have tried to find statistics put out by men who have treated a large number of these fractures with the idea of correlating, if possible, the final result; first, with the type of treatment; second, whether or not a correction of the compression was accomplished; third, the length of time that the spine was immobilized; fourth, whether or not a brace was used; fifth, the length of time the individual had to remain away from work, and sixth, the percentage of permanent disability. Reports of this type are surprisingly rare. In fact, I could find no report that gave exactly these features. One thing seems quite certain, that the healing period and the percentage of permanent disability appears to differ in compensation cases and private patients where no medico-legal problem is involved.

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FRACTURE DISLOCATION OF THE SHOULDER

Geo. D. Eitel, M.D.

DISLOCATION of the shoulder complicated by a fracture of the upper third of the humerus is an injury that demands prompt and accurate treatment. Physical examination presents the appearance of a dislocation in addition to marked swelling and discoloration in the region of the upper third of the arm. A large hematoma may be present and this should make one strongly suspicious that a fracture is present. Palpation reveals increased muscle spasm and any attempt to manipulate or examine the shoulder is accompanied by severe pain and the presence of crepitus unless the fracture is impacted. The head of the humerus will not rotate with the shaft.

The mechanics of the causation of this type of injury is usually a direct force which is applied to the upper third of the humerus with the arm in abduction and the edge of the glenoid cavity or the acromium process acting as a fulcrum. The dislocation is first produced and if the force is continued a fracture follows.

Dr. Scudder stresses the point that care must be exercised in reducing a simple dislocation so that a fracture of the humerus is not produced during the manipulation and reports 59 cases of fracture which resulted during this procedure.

X-ray pictures of this type of injury are of great importance and should be carefully interpreted by a capable roentgenologist. Stereoscopic plates, if obtainable, are to be preferred although a flat plate will do providing detail is present. Many times the attending surgeon examines the X-ray plate, notes the fracture and displacement of fragments, but entirely overlooks the dislocation of the humeral head. The fracture is perhaps treated with more difficulty than the average case. Further X-rays are taken to follow the progress of the fracture when the dislocation is discovered, but here I emphasize the importance of a trained roentgenologist who will examine the plate with you at the start. If a roentgenologist is not available, the surgeon should assure himself that no dislocation is present before he proceeds.

How often does fracture dislocation occur? Myerding recently reported 114 fractures of the humerus. Sixty of these were of the upper end of the humerus, and of these, 10 were fracture dislocations, or one in six. Roberts recently reviewed 96 cases of fracture of the upper end of the humerus from the Massachusetts General Hospital and of these, 13 were fracture dislocations or a ratio of about one in seven.

Any type of fracture of the upper third of the humerus may accompany a dislocation and in the order of their frequency are:

1. Fracture of the greater tuberosity.
2. Fracture of the surgical neck.
3. Fracture of the anatomical neck.
4. Separation of the upper humeral epiphysis.
5. Fracture of the glenoid of the scapula.

Fracture of the Greater Tuberosity

Fracture of the greater tuberosity is the most common and causes little difficulty in reduction. Cubbins surveyed 155 cases of fracture of the upper end of the humerus and found 28 cases of fractured greater tuberosity with ten of them

associated with a dislocation. With careful reduction of the dislocation the greater tuberosity is usually accurately approximated to the humeral head and is maintained by abduction of about forty-five degrees. Early massage is of great value and active motion at two weeks aids in reducing the prolonged disability due to immobilization. Open reduction of this type of fracture is never indicated.

Fracture of the Surgical Neck

Of 122 cases collected in the literature by Lyman, 73 were of this type. There has never been a standard type of treatment for this injury. Pasicrates, in 50 B. C., in describing the injury, stated that he preferred to reduce the dislocation and then allow union of the humerus. Aristan, on the contrary, thought union should take place first. These two methods of treatment have always existed. Some cases have been reported where an effort was made to prevent union and thus establish a false joint at the seat of the fracture and others have taught that all heads must be excised, and others, that open reduction should be resorted to in all cases. The consensus of opinion today is to reduce the dislocation first and then treat the fracture.

The principal steps in the treatment of this injury are abduction, traction, and countertraction with pressure in the axilla. Care must be exercised so that the axillary vessels and nerves will not be injured and the sooner after the injury that reduction is attempted the easier it is to be accomplished. A fracture closer to the head of the humerus is more difficult to reduce than one closer to the shaft because of the absence of muscular attachments. Bardenheur in 1886 established the fundamental fact that traction on the lower fragment in fractures of the upper end of the humerus is transmitted to the upper fragment through the untorn periosteum and the tendon of the long head of the biceps muscle. So with the periosteum, muscles and tendons, we are able to effect traction on the head and reduce it.

In 1929 we were confronted with a case of a badly comminuted fracture of the surgical neck which did not respond to the usual abduction treatment with traction. We then devised a method in which we used the Hawley table by bringing the traction bars, which are usually used to effect leg traction, to right angles to the table. In this way we obtained screw traction on the padded forearm in one direction and counter traction by means of a swathe around the body which is fastened to the opposite extension bar. The patient was given ether and when anaesthesia was complete the screw traction was begun. We also placed a swathe around the upper end of the humerus close to the axilla. An assistant applied continuous traction. With these three forces the dislocation was reduced with comparative ease. Following which the usual treatment for fracture was instituted.

Now let us see what the other school taught; that is, allowing the fragments to unite in the position of dislocation and attempt closed reduction or do an open reduction. The adhesions and scar tissue are usually so firm that the procedure results in either failure to reduce the dislocation or refracture the neck in attempting to do so, and frequently both.

In 1928 we had a case in which the patient, age 75, had multiple fractures along with a fracture of the surgical neck of the humerus. A splint with traction was applied and three days later while checking the position of the fracture, a subglenoid dislocation of the head was noted. All methods were unsuccessful in effecting a reduction so it was thought best to let union take place, and then effect reduction. Four and one-half months later the fracture was healed and an open reduction done to reduce the dislocation. In this procedure we produced another fracture of the surgical neck and had to remove the entire head.

From this case we have learned that every effort should be made to reduce the dislocation within the first ten days and then treat the fracture. If it is not accomplished, open reduction is indicated and the head should be replaced. Removal of the head should not be done because the functional results are bad due to destruction of the muscle attachments.

Fracture of the Anatomical Neck

These fractures associated with dislocation were present in 28 of the 122 cases in Lyman's series (73 of which were in the surgical neck). They are more difficult to reduce and the same procedure should be followed as with surgical neck fractures. If not accomplished by closed reduction, operation should be done.

Rechtman, of San Francisco, urges replacement of the head rather than excision even though the humeral head is entirely detached from the soft tissues and, therefore, from its blood supply. Most other authorities, including Dr. Kellogg Speed, with whom I discussed this subject this past Saturday, says that all heads in this type of injury should be removed and the proximal end of the humerus placed in the glenoid fossa. Early active motion should be instituted and a good functional result is usually obtained.

In old people sometimes it is better judgment

to allow the dislocated head to remain in its position providing there is no pressure on the axillary nerves or vessels. In this case early passive motion should be instituted to prevent muscle atrophy and bony union to the lesser tuberosity.

Separation of the Epiphysis

The accurate reduction of epiphyseal separation accompanying dislocation is most important because most of the growth of the humerus takes place at the upper end. This occurs only in patients under twenty years of age at which time the epiphysis has usually united with the shaft. Closed reduction should be tried first according to the outlined method and if not accomplished, open reduction should be done, and the head always replaced. Early motion should be instituted.

Conclusions

In this paper I have emphasized the importance of the early recognition and treatment of dislocation of the shoulder complicated by fracture of the upper end of the humerus and urge that the dislocation be treated promptly and conservatively by means of abduction traction and countertraction by the use of a Hawley table. If unable to reduce after one week, open operation must be done. In surgical neck fractures the head should be replaced in the glenoid cavity and in anatomical neck fractures, the head should be removed.

THE TREATMENT OF FRACTURES OF THE LOWER END OF THE HUMERUS

Orwood J. Campbell, M.D., Ph.D.

FRACTURES of the lower end of the humerus are of particular importance because of their influence on the future function of the elbow joint. In the interest of a good functional result, perfect anatomic reduction is of the greatest importance. Recent literature indicates a growing appreciation of this fact and open reduction is being more and more frequently resorted to when the best effort with the closed method leaves the fragments imperfectly approximated.

There are considerable differences in the mechanism, types and prognosis of these fractures in children as compared to adults.

The treatment, however, is much the same for both children and adults, and despite the desirability of considering each separately they are here considered together because of limited time.

Supracondylar Fractures, Dicondylar Fractures, and Separation of the Epiphysis as a Whole

Supracondylar fractures are the most frequently encountered of all fractures of the distal end of the humerus. Two varieties are described; the extension type in which the plane of the fracture line runs obliquely backward and upward, and the flexion type in which the obliquity is backward and downward. The former type greatly predominates and is accompanied by a characteristic backward displacement of the distal fragment, with prominence of the elbow and apparent shortening of the forearm. In children, the obliquity is less marked but the displacement is the same. There may be variable degrees of medial or lateral displacement associated with either variety.

Dicondylar fractures are intracapsular, traverse the olecranon fosso, and occur only after fusion of the epiphyses. Separation of the epiphysis as a whole usually occurs only in the very young before the development of separate ossification centers. They are included here since the treatment is the same as that used for supracondylar fractures.

Flexion of the elbow has been so frequently mentioned that a discussion of the treatment may well be prefaced by the admonition that the act of flexing the elbow does not accomplish reduction but is used solely in order to maintain a reduction already secured.

Such fractures are to be considered as surgical emergencies and when treated promptly, limit the swelling and give a higher percentage of satisfactory primary reductions than when treatment is delayed. Except in the most extreme degrees, the best treatment for the swelling is reduction.

Reduction of the fracture should always be done under anesthesia (local for adults, general for children), and may be accomplished by the following maneuvers:

1. Traction on the forearm or condyles with the entire extremity in external rotation.
2. Slight hyperextension.
3. Manipulation of the distal fragment into position.
4. Correction of any medial or lateral displacement.
5. Flexion of the forearm on the arm.

Satisfactory reduction aims to preserve the proper forward tilting of the axis of the articular surface with respect to the axis of the shaft and the avoidance of the "gun stock" deformity or loss of the carrying angle which results when medial displacement of the distal fragment is not corrected or when medial rotation of the distal fragment is allowed to occur. Cotton and others

have called attention to the fact that the shaft of the humerus is maintained in moderate external rotation and that the reduction should be accomplished in this position if some relative internal rotation of the distal fragment is to be avoided. It seems to be impossible to over correct by external rotation.

Traction therefore should be made with the extremity in external rotation until overriding has been overcome. A slight degree of hyper extension will enable the distal fragment to be slipped into place and lateral or medial displacement corrected. The position may then be maintained by flexing the forearm in which position the insertion of the triceps tendon is anterior to the axis of the humerus and the fragment is held snugly in place. Backward displacement is prevented by the tense expanded portion of the triceps tendon.

The degree of flexion required to hold the distal fragment in place is a matter of judgement, purely, and is limited by the amount of swelling about the elbow. Most fractures are held by a moderate amount of hyperflexion. Extreme hyperflexion is rarely required. A safe rule is that of Key and Conwell, to flex until the radial pulse is lost and then extend past the point where it returns. The patient should then be kept under close observation for twenty-four hours.

The above described method of reduction is essentially that of Jones who, after reduction in external rotation, then maintained flexion by fastening forearm to arm with adhesive tape or bandage and swung the extremity across the front of the chest with the padded wrist suspended just below the neck.

Unquestionably, this method suffices in most cases but Eliason has shown that the act of swinging the arm and forearm across the chest brings about a change in the relation of arm and forearm and may result in slipping and internal rotation of the distal fragment.

This danger may be lessened by applying a posterior moulded plaster splint to the arm and forearm. After the splint has hardened the extremity may be swung across the chest and supported by a bandage or swathe.

Fractures showing a tendency to slip and high supracondylar fractures are better immobilized with the flexed forearm maintained in external rotation. This is accomplished in a simple manner by including the forearm and chest in plaster bandages.

In the flexion type of supracondylar fractures there is a temptation to maintain the forearm in full extension. Such a position is undesirable from the standpoint of recovery of useful motion. Anterior and posterior moulded splints applied to the extremity with ninety degrees of flexion at the elbow will usually maintain correct position.

The period of immobilization is again a question of judgement. Early active motion within the range of slight pain and early light massage are highly desirable. This may be safely accomplished in some cases as early as the tenth day and in others may have to be delayed for three weeks. Rarely should active motion be delayed longer than three weeks in the adult. At the end of four to six weeks the posterior splint may be removed and the forearm supported in a sling.

Often active motion must be started and maintained even though some loss of position is suffered. A perfect anatomic result is a hollow achievement if it is accompanied by a stiff elbow. Passive motion should be used with caution and preferably in the later stages of healing. Too early and too enthusiastic passive motion may produce exuberant callus with bone block and restriction of motion. In children, passive motion must be delayed four to six weeks because of the danger of producing myositis ossificans.

T Fractures and Comminuted Fractures

T fractures and comminuted fractures may be treated by open reduction and fixation, in those cases in which the fragments are large enough to be fitted and held in place. The rustless steel nail with the head left close beneath the skin for early removal is probably the best method of fixation.

Badly comminuted fractures are best treated by continuous traction with a Kirschner wire inserted through the olecranon. In this way early active motion can be started while traction is maintained. For the inexperienced surgeon this method may also be used in place of open reduction. A crude operation about the elbow joint will be disastrous to future joint function because of the overproduction of callus.

Condylar Fractures

Condylar fractures are next in frequency to the supracondylar variety and in children occur almost as frequently. The external condyle is most often affected. In very young children the separation follows the cleavage line of the external condyle and enters the joint to include capitellum and the external edge of the trochlea. In older children the line within the joint is the same but the outer margin of the shaft usually comes away with external epiphysis.

The displacement is usually limited but there

may be wide separation and there is a strong tendency to rotation downward, outward, and forward. This displacement affects the joint surface and in children may result in non-union, growth disturbance, and consequent valgus deformity.

Any reduction which is not perfect jeopardizes union or results in excess callus and limitation of motion. Reduction by closed methods may occasionally be effective, but open reduction with fixation by suture or nailing will be found necessary in most cases and is recommended by Speed and Macy and others who have analyzed their results in cases in which both open and closed methods have been used.

Internal Epicondyle

Fractures of the internal epicondyle are rare. They are best treated by flexion of the elbow and manipulation. Union is often fibrous but the disability is not great. Some permanent weakness in the extensor group may result. For persistence of pain in an ununited fracture the fragment may be removed. In certain individuals, when strength in the extensor groups is important, widely separated fragments which do not approximate well should be sutured or nailed into place.

Volkmann's Ischemic Paralysis

A discussion of the treatment of fractures about the elbow would be incomplete without mention of Volkmann's ischemic paralysis, that most dreaded of all complications. Formerly attributed to tight splints or bandages, Volkmann's palsy is now known to occur most frequently as the result of subfascial hemorrhage into the flexor muscles of the forearm. The resultant swelling cuts off the circulation and causes death of muscle fibers and replacement with connective tissue. Scherb aptly points out that were circular constriction the common cause, the extensors as well as the flexors would be involved.

The early signs of such an impending disaster are most commonly:

a. Pain radiating into the fingers and made worse by passively extending the fingers.

b. Pallor or cyanosis of the fingers.

c. Reduction in volume, or loss, of the radial pulse.

d. Increasing pain after reduction of the fracture.

Irreparable damage may occur early, so that in cases showing the above evidence of circulatory disturbance, prompt action must be taken. A longitudinal incision on the medial aspect of the elbow and forearm with incision of the fascia and drainage of the muscle planes will prevent further damage and does no harm beyond producing a scar. Do not depend on the removal of the plaster. Subfascial hemorrhage caused the trouble and will usually require operation.

Conclusions

1. The ordinary standards for satisfactory anatomic reduction of fractures are inadequate when dealing with fractures of the distal end of the humerus.

2. Perfect anatomic reposition of fragments should be the objective.

3. In certain types, such as condylar fractures, accurate reduction is important enough to warrant open reduction and fixation of fragments.

4. Complications should be watched for an immediately and effectively treated.

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FRACTURE DISABILITY ESTIMATION

HARVEY NELSON, M.D.

TIME does not permit a very detailed discussion of a subject which must be of a detailed character in order to have considerable practical value. I shall endeavor in this paper (1) to explain as simply as possible what some of the fundamental compensation laws are that govern our estimation of disability, (2) to outline a simple procedure for arriving at fairly constant percentages of disability and finally, (3) to indicate what some of the basic values of function are in various joints or integrals of extremities.

It is surprising that the profession as a whole has so little conception of definite values of disabilities in fractures. It repeatedly occurs that one physician, for example, will make an estimate of disability of 75 per cent and another of 10 or 15 per cent. A certain amount of variance is, of course, justifiable as a matter of opinion or as a matter of mathematical error. However, examinations made with any reasonable understanding should not vary more than 10 per cent except in

exceptional or complicated cases. The ability to estimate permanent disabilities serves the further purpose of mathematically evaluating the end result that has been obtained and brings to an interesting and concrete conclusion the end result of any particular fracture.

I would like to express a word of caution—that after all, it is the permanent disability we are estimating and the permanent disability, therefore, should not be estimated until it is reasonably certain that a permanent state has been reached. One common cause for error is too early a final examination or an early attempt to anticipate what an eventual permanent disability will be.

1. The Compensation Plan

I am compelled to confine this discussion to the scope of the Minnesota Compensation Laws for the reason that I would like to make this simple and understandable and because I am not conversant with the laws of our adjacent states. The fundamental principles, however, are constant and the same ratio of values should hold in any state.

There are certain types of fractures which can be broadly excluded in this discussion for the reason that the law does not designate any specific value to that particular member of the body. I have in mind skull fractures and compression fractures of the spine. There is no specific value placed on the head, the neck or the back. Such fractures either result in complete recovery or fall into the general classifications of permanent partial or permanent total disability. In these cases it is always a question of whether a workman can or cannot work without any necessity for an estimation of percentage loss of function. These cases, therefore, do not come under the purpose of this paper.

Probably many of you are entirely familiar with the basic values of extremities established by the Minnesota Compensation Law. For the benefit of those of you who do not have this information, and for the purpose of simplifying our discussion, I have tabulated these figures in a chart. The law has established the value of all or a part of an extremity in terms of weeks of compensation payments rather than in dollars and cents. To make myself clear, a workman is entitled to a healing period up to 25 weeks for convalescence in which the individual is actually laid up from work. The permanent disability is paid in addition to this. For example, if a man lost an index finger and were laid up from work four weeks, he would receive four weeks compensation as his healing period and then would continue to receive compensation for another 35 weeks, 35 weeks being the specified value of the index finger.

The established values of all or parts of the extremities are, therefore, classified by law as follows:

UPPER EXTREMITY	
Arm	200 Weeks
Hand and Wrist	175 Weeks
Hand	150 Weeks
Thumb	60 Weeks
Index Finger	35 Weeks
Middle Finger	30 Weeks
Ring Finger	20 Weeks
Small Finger	15 Weeks
LOWER EXTREMITY	
Leg	200 Weeks
Foot and Ankle	150 Weeks
Foot	125 Weeks
Great Toe	60 Weeks
Other Toes	10 Weeks Each

In estimating disability, therefore, we have to specify the smallest unit that is involved in that particular fracture. If the index finger again is the one involved, the disability estimate should be made on that finger and not for example on the arm or hand. It should also be remembered that estimates under the Minnesota Law are made with regard to general usefulness without any relationship to any particular occupation that any one individual may have been engaged in.

2. The Method of Procedure

In order to arrive at a uniform method of estimating disability, the procedure should be simple in order to be practical. I believe we are safe in saying that fractures cause permanent disability, primarily, by loss of, or instability of joint functions; secondly, by malposition which in turn expresses itself in terms of mechanically wrong or painful joint function, and thirdly, by shortening. Weakness as a result of fractures, I believe, is ordinarily a symptom which merely indicates a more primary condition upon which our disability should be estimated. Muscle atrophy and weakness are, therefore, ordinarily included in the estimation of disability in terms of loss of joint function as far as fractures are concerned. I am not going to attempt to describe the method of deriving a disability rating according to specific fractures even of specific bones. The type of fracture, whether it is simple or comminuted, whether it is in good position or not, whether it does or does not involve a joint surface and whether it does or does not distort the joint contour, and whether there is union or not, are, of course, all factors of importance and contributing factors to the end result. For all practical purposes, however, the main consideration reverts itself primarily to a determination of loss of joint

function. The most obvious exception to this is shortening. For the average case a shortening of less than one inch in the lower extremities would scarcely be sufficient in itself to cause permanent disability. In my opinion, a shortening of one to two inches would cause 10 to 20 per cent loss of the leg. Shortening in most cases would play no material part in the upper extremities.

What equipment would be necessary then, to accurately estimate disabilities? I believe that a tape measure, an ordinary carpenter's angle rule and possibly a grip machine are all that are necessary for any case. We always make it a practice to accurately measure various levels of circumference in each arm or each leg, where involved, in order to accurately record the effect a fracture might have in causing swelling or atrophy. Shortening should be measured and not guessed at .

Measurements of joint function are quite simply accomplished by merely measuring the angles of movement on the involved side with the angle rule, and comparing this range with the arc on the normal side. As a rule where a fracture is uncomplicated by any cause by loss of motor control, such as a nerve or muscle injury, it is better to measure the passive range of motion than the voluntary, as being a more accurate indication of the ultimate result. It is always advisable to measure the angles of range of all component motions in a joint area; for example, in the elbow, pronation and supination of the forearm should be considered as well as flexion and extension of the elbow joint proper. I, personally, make it a practice of comparing the motions of all the joints on one side with the other as a means of determining the smallest unit involved. In evaluating the loss of motion that is present, it is necessary to allow for the fact that certain portions of the range of motion are more valuable than others; for example, the central two-thirds of the range of elbow motion is more valuable than the extremes of the range. The 90° of shoulder motion up to the horizontal is much more valuable than the 90° from the horizontal and up.

3. An Evaluation of Joint Movements

The concluding portion of this paper is given with some hesitancy. It is somewhat of an assumption, to say the least, to put an arbitrary relative value on joint functions, although I believe the percentages given here come reasonably close to the generally agreed evaluations. To avoid confusion, no attempt is made to differentiate the value of different parts of the arc of motion in any joint. The following evaluations are merely given for basic determinations of each joint's value with the assumption being that the ankylosed joint is in good position.

UPPER EXTREMITIES

Shoulder Movement:	
Arm at Side	75% of Arm
From Horizontal to Vertical	25% of Arm
Elbow Movement:	
Good Position Otherwise	60% of Arm
Pronation and Supination:	
Neutral Position	25% of Hand and Wrist
Wrist Movement:	
Including the Movements of Dorsification, Palmar Flexion, Radial Deviation and Ulnar Deviation	35% of Hand and Wrist
Fingers:	
Proximal Interphalangeal Joint	60% of Finger
Distal Interphalangeal Joint	40% of Finger

In testing movement of the fingers the estimation of disability is sometimes facilitated by holding the metacarpal phalangeal joint in a normal right angle flexion which transmits the limitation of motion to the interphalangeal joints, making the estimation a simpler procedure.

LOWER EXTREMITIES

Hip Joint Movement	75% of Leg
Knee Joint	60% of Leg
Ankle Joint	35% of Foot and Ankle
Subastiagloid Joint	35% of Foot
Great Toe (Interphalangeal Joint)	25% of Toe

In closing, I would like to mention several other factors which enter into our determinations. The first is instability of a joint, as in fractures of the tibial plateau where a downward depression of the condyle, together with a tearing of the lateral ligaments, causes an instability that may contribute toward a disability anywhere from 10-35 per cent loss of function of the leg. Another factor is the matter of pain such as in a fracture of the scaphoid bone of the wrist where a 10 per cent disability is frequently in order, and where an ultimate disability with loss of some motion as high as 20-25 per cent loss of function of the hand and wrist occasionally occurs. When a fracture occurs, pain may be a common factor in disability as in a fracture of the os calcis. If the fracture line here does not involve the subastragloid joint, frequently, no permanent disability results, providing no deformity has occurred. Where this joint is involved a disability of 10 to 20 per cent of the foot, not including the ankle, usually occurs and this may run as high as 35 per cent.

These facts are submitted with the full knowledge that the figures quoted are subject to criticism and may be justifiably challenged. It is merely hoped that an attempt toward standardization of methods and basic facts will lead to more uniform opinions on a subject that should be largely mathematical. It is only by a cold

mathematical conception of this subject that we all can hope to approach an impartial computation that would be of real value to all parties concerned.

DISCUSSION

Dr. B. J. Branton, Willmar, Minn.: (by invitation) It has been a great pleasure for me to come to Minneapolis and attend this Symposium. It has been my opportunity, during the last two or three months, to go over a number of questionnaires on mal-practice sent to the State Society and it has given me some rather accurate knowledge of just what is going on in the state in that regard. Following a Symposium of this type, it should be interesting to you to know something about what is going on in regard to mal-practice. It seems that following such a fracture meeting as this we should also have something along that line.

Checking over between 900 and 1,000 of these mal-practice questionnaires, I found this interesting fact; out of that number approximately 65 per cent of the mal-practice suits concerned fractures. Approximately 29 per cent of the men in our State Society have been harrassed by mal-practice suits or threatened mal-practice suits brought against them which had been stopped before getting into court. It doesn't seem possible that 29 out of every 100 men have been worried by mal-practice suits and that 65 per cent had something to do with fractures. From these deductions I feel two things; first, that within the State Society we must keep closer to the old-fashioned type of ethics, and second; from now on we must have more accurate knowledge of fractures such as we gained here tonight in this wonderful symposium. As to the matter of ethics, it was interesting to me to see the good fellowship you had around the table, and following out that same trend is the fact that you have had a fine piece of post-graduate work, the speakers having given us accurate knowledge of many unusual things in a practical way.

I want to thank you for the opportunity of speaking here and again to tell you how glad I am that I came.

Dr. Henry W. Meyerding, Rochester, Minn.: (by invitation) I want to congratulate the Minneapolis Surgical Society upon the excellence of this program. The speakers have presented papers of practical interest to every physician. It would seem an excellent plan to place this vast amount of useful material in the form of a pamphlet for the general practitioners of the State.

It is impossible to discuss many of the points of interest which come to mind, so I will confine my remarks chiefly to the danger of Volkmann's ischemic contracture and to fractures of the hip treated by open operation.

The most common fracture associated with Volkmann's ischemic contracture is the supracondylar, which frequently occurs in children. When seen early and proper reduction is carried out, the Jones position of acute flexion gives excellent results. Should swelling be present before reduction, or reduction be imperfect, this position is dangerous because of the pressure exerted on vessels and nerves. Constant observation of circulation at the wrist must be maintained lest cyanosis and unbearable pain warn the physician or nurse of impending disaster. When the fracture cannot be maintained in good position without impairing circulation, it is best to leave it unreduced and to elevate the arm and then apply moist warm dressings for a few days. When a hematoma causes impaired circulation to a point of danger, early drainage and reduction are best. I have reported 128 cases of Volkmann's ischemic contracture and consider it one of the most disastrous complications of fractures, as it occurs so frequently in childhood, entails more or less permanent disability and often leads to mal-practice suits. It is to be remembered, however, that Volkmann's ischemic contracture may occur when no treatment has been given.

The trend of orthopedic surgery for fractures of the neck of the femur appears to be toward internal fixation. The Whitman treatment of closed reduction and casts in the majority of cases has been and should be the treatment of choice among general practitioners. The convalescent period is long, the fixation irksome, and in the hands of many results are not as satisfactory as desired. In our desire to obtain accurate reduction, speedy union, and more certain results, we have utilized Johansen's method of open reduction, running a Kirschner wire through the trochanter, neck and head, and then driving a special Smith-Petersen nail, with a hole drilled longitudinally, along the wire. This permits accurate fixation, as the eye and roentgenogram check the position of the wire and nail. The wire is easily withdrawn, and the nail holds the parts firmly and accurately. Casts are worn, but the period of fixation in our cases has been reduced to a matter of weeks.

Gentlemen, I appreciate the invitation to attend your meeting and look forward to your next symposium.

Dr. Robert Earl, St. Paul: (by invitation) I greatly appreciate the privilege of being present at this instructive meeting.

I was especially interested in Dr. Zierold's paper on brain injury. In brain injuries, when both pupils are dilated and both fixed, we should give a grave prognosis. When one eye is dilated and one is not, it is assumed by many practitioners that this is an indication that the greatest brain injury has occurred on the side of the dilated pupil. It should be considered as a suggestive but not a positive sign.

The so-called "choke disk" does not occur until from twenty-four to forty-eight hours after injury, which is too late to be of diagnostic value as to the amount of intracranial pressure present in the early period.

Given a head injury in which the patient may have had a longer or shorter period of unconsciousness from concussion, followed by partial or complete return of consciousness, this followed by a second period of increasing stupor or unconsciousness with evidence of hemiplegia, we should think of a gradually increasing hematoma from hemorrhage. A hemorrhage may be so rapid as to endanger the patient's life in two or three hours or so slow as to require several days to form a hematoma large enough to jeopardize the patient's life from cerebral compression. These hemorrhages are often extradural from rupture of the middle meningeal artery and should be diagnosed and operated early as this offers the only chance of saving the patient's life.

In laceration of the brain, the unconsciousness and paralysis are present immediately after the injury which should help differentiate between laceration and hemorrhage. Brain lacerations cannot be helped by operation.

Dr. Arthur N. Collins, Duluth, Minn.: (by invitation) It has been thoroughly worth my while to come down from Duluth and listen to this program. One can always learn something in any symposium on fractures and this has been no exception. The hour is late and I will not attempt any discussion at this time. Nothing pleased me more, however, than to listen to these well presented papers. Let me thank the committee for my invitation to attend.

Dr. F. J. Savage, St. Paul, Minn.: (by invitation) I was under the impression that the subject of fracture of the shaft of the humerus was to be presented. The reason I am presenting slides No. 1 and No. 2 is that this splint, which provides efficient traction in such cases, is homemade and anyone can make one with a hammer, saw and nails, from a few strips of wood. Traction is provided by adhesive below the line of fracture and the strips tacked over the lower right angled arm. Counter traction is provided by a fitted piece of harness-maker's felt, covered with adhesive, and brought over the top of the upper arm and held in position by an additional band of webbing. This webbing may be sewed or pinned where it crosses the upper arm. Slide No. 1 shows a full length splint and No. 2 a shorter splint with the elbow bent and the forearm in a sling. Care of the axilla by alcohol sponging and the use of talcum powder is essential.

With slides No. 3, 4, and 5, I wish to substantiate Dr. Webb's presentation of complicated knee joint fractures. This man was 46 years of age, and was using climbing iron on a power line pole. He fell 16 feet to frozen ground. The condition of his skin would not permit immediate operation. At the time he was first seen some eight ounces of fluid were evacuated from the knee joint by knife puncture, the alignment of the shaft of the tibia corrected, and the leg suspended in a Thomas splint. Nine days later the knee joint was opened and the large fragment from the inner condyle brought into as good position as was possible. Through the same incision the condylar surfaces were elevated, and through small lateral incisions, a stove bolt was passed through a drill hole across the upper end of the tibia. The upper two inches of the tibia were so comminuted that it gave the impression of a bag of crushed ice.

The leg was suspended in a Thomas splint with a hinge at the knee, and a Kirschner wire passed through the os calcis and five pounds of extension applied. The Kirschner wire rested across the lower end of the splint and prevented rotation.

Passive motion, light massage and application of heat were started on the second and third days. The bolt was removed in 4½ weeks. The mas has extension to within five degrees of normal, flexion to over ninety degrees, but five degrees more lateral mobility than on the normal leg.

NEWS ITEMS

Dr. D. D. McNaughton, Devils Lake, N. D., died on February 19th at his home, after a short illness of pneumonia.

Dr. F. L. Andrews, Great Falls, Mont., is taking a post-graduate course in surgery, at the Mayo Clinic, Rochester.

Dr. and Mrs. C. W. Mayo and Dr. and Mrs. J. T. Priestly, Rochester, have sailed for a few weeks vacation in Europe.

Dr. H. J. Nilson, formerly located at Tracy, has moved to North Mankato, Minn., where he will continue in active practice.

Dr. D. F. Wood, for many years a practicing physician of Minneapolis, died last month at St. Petersburg, Fla., where he was spending the winter months.

Dr. A. S. Rider, Flandreau, S. D., gave a very interesting lecture on "Tuberculosis" recently before the members of the Lions Club, of that city. His talk was illustrated by X-ray pictures.

At the February meeting of the members of the Black Hills Medical Society, at Lead, S. D., papers were presented and discussed by Drs. R. B. Fleeger, N. W. Stewart and F. L. Humer.

Dr. F. Denton White, Minneapolis, was elected president-elect of the Minnesota State Dental Society. At the annual meeting recently held in that city over 2,000 dentists were registered.

Dr. Lewis I. Younger, Winona, was recently married to Miss Edith Braun of that city. They will make their home in Winona, on their return from a wedding trip of several weeks in Florida.

Plans are being made for the erection of a new hospital at Windon, Minn., providing a certain amount of funds are secured. A modernly equipped hospital is badly needed in that vicinity.

Dr. William Peyton, head of the tumor clinic of the University of Minnesota Hospital, addressed the members of the Grand Forks District Medical Society at their regular February meeting.

Dr. Louis Holtz, Stanton, N. D., charged with unlawful sale of narcotics, entered a plea of guilty in federal court recently and was placed on 18 months probation. No sentence was imposed.

Dr. J. K. Anderson of the Hennepin County Medical Association and Dr. R. B. Wilson of the Minnesota Dental Association addressed the Minneapolis Association of Retail Druggists at the February meeting.

At a recent meeting of the members of the Kotana Medical Society held at Williston, N. D., the new officers elected were Dr. L. B. Dochterman, president; J. P. Craven, vice president: Dr. I. S. AbPlanalp, secretary.

Dr. A. C. MacDonald, Valley City, was elected president of the Sheyenne Medical Society: Dr. Fred Brown, vice president; and Dr. W. H. Moore, secretary, at the annual meeting recently held at Valley City, N. D.

Dr. W. G. Magee, Watertown, president of the South Dakota State Medical Association, was one of the principal speakers at the Northwestern Medical Conference at St. Paul. Dr. Magee's subject was "A Survey of the Basic Science Law."

Dr. Gebbard J. Long, died at his Ramona, S. D., home last month from a sudden attack of pneumonia. Dr. Long was 49 years of age and a graduate of Rush Medical College in 1909, and had always taken an active part in all meetings of state and county medical societies.

Women physicians of Hennepin County were honor guests of the Women's Auxiliary to the Hennepin County Medical Society, March 1, at a program and tea in the Medical Library. Guest speakers were Dr. Esther M. Greisheimer, Dr. Ruth Nystrom and Dr. Eleanor J. Hill.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters). The program is as follows: March 19, Agranulocytosis; March 26, Children's Dentistry.

New officers of the Minneapolis Surgical Society are Dr. F. O. Olson, president; Dr. R. R. Cranmer, vice-president, and Dr. E. A. Regnier, secretary-treasurer. New members of the executive committee are Dr. Kenneth Bulkley, Dr. O. W. Yoerg and Dr. L. H. Fowler.

The regular meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, St. Paul, on the evening of March 13th, with papers being presented by Dr. Harry P. Ritchie, on "The Congenital of the Face and Jaws," and by Dr. George Fahr, on "Mechanism of Hypertensive Encephalopathy."

A bill enacted by the Montana Legislature has become a law, supplementing the pharmacy practice act by authorizing the state board of pharmacy to adopt rules requiring registered pharmacists to keep a record of all poisons sold or disposed of, containing the signatures of the purchasers and such other information as the board may require.

Speaking under the auspices of the Hennepin County Medical Association, Dr. J. A. Watson, addressing members of the Minneapolis Business Forum, Minneapolis, decried the possibilities of government intruding upon the medical profession. "Medicine today," he said, "is still a mystery to many people and there are individuals who would rather place themselves in the care of a seventh son of a seventh son than receive treatment from a qualified physician."

A Bill introduced in the North Dakota Legislature proposes a procedure whereby county commissioners may levy a tax of not exceeding 6 mills on every taxable dollar of real estate and personal property within the county to pay for medical, surgical and hospital care for all of the residents of the county. Residents apparently are to be permitted to choose any physician or hospital they desire and the county will pay for the services according to a stated schedule.

A meeting of the Executive Board of the South Dakota Medical Auxiliary was held at Huron last month to arrange plans for the annual convention to be held at Pierre, May 13, 14 and 15th. This being the twenty-fifth anniversary of the auxiliary, a very large attendance will be present. The following members are in charge of the program, entertainment, etc.: Mrs. H. B. Martin, Harrold; Mrs. A. E. Johnson, Watertown; Mrs. N. K. Hopkins, Arlington; and Mrs. G. E. Burnham, Carthage.

The Minnesota Dermatological Society announces the second annual Vander Horck lecture and clinic. The guest of honor this year will be Professor Franz Blumenthal of the University of Michigan, formerly of Berlin who will lecture before the University Hospital staff at 12:30 on Thursday, April 18th. The subject will be the "Paradoxical Influence of the Sun's Rays on Cancer, Causative and Curative." All physicians are invited to attend the lecture. The Vander Horck meetings were begun last year in commemoration of Dr. Max Vander Horck.

The Montana State Medical Association and the American Public Health Association will hold joint annual meetings at Helena, on July 2nd and 3rd. By holding both meetings on the same days, the Montana doctors will be given an unusual opportunity of hearing the latest in health and medical problems, as well as renewing local acquaintances and meeting the distinguished guests who will be present and present papers. Among those who have accepted invitations are Dr. J. A. Myers, Minneapolis; Dr. Max Cutler, Michael Reese Hospital, Chicago; Dr. R. G. Leland, Chicago, and many others. This meeting should be one of the largest and most enjoyable ever held in Montana.

Four Minneapolis men associated with the Medical School at the University of Minnesota have been honored by having their names starred in the volume *American Men of Science*. These men are: Richard E. Scammon, dean of the medical sciences; Edward A. Boyden and Hal Downey, of the department of anatomy; and J. F. McClendon, of the department of physiology. Richard E. Scammon, Ph.D., dean of medical sciences at the University of Minnesota, addressed the Sigmi Xi scientific honor society on Friday night, February 15, in the Cyrus Northrop Memorial Auditorium at the University. Using slides, Dean Scammon charted the growth of the world's civilization from 465,000,000 in 1650 to the present population of more than 1,500,000,000, observing that the rate of increase in population for the world has shown a decrease since 1900. He predicted a U.S. population of 140,000,000 in 25 years and expects an annual increase of 10,000 persons until the year 1940, 7,000 a year until 1950, and a stationary population level after that time.

Knowledge concerning those clinical conditions generally considered allergic has increased rapidly in the past few years. For the patient with bronchial asthma or hay fever, until recently, little hope of relief was entertained. The majority of these, if properly diagnosed and treated, can now be completely relieved. Other clinical conditions including urticaria, eczema, migraine, sinus conditions simulating infection, certain cases of intestinal and biliary colic, have been proved allergic in origin. The relief of patients who suffer from allergic conditions necessitates the discovery of the exciting causes. Unfortunately, the causes are many and frequently difficult to determine. The practitioner who graduated a few years ago has had little opportunity for instruction in the methods used in the diagnosis and treatment of allergic conditions. For the benefit of physicians who are interested in the recent development of the clinical aspect of allergy, a short course has been arranged through the Extension Division of the University of Minnesota. This course will consist of lectures on the nature of allergy and its clinical manifestations, including hayfever, asthma, urticaria, migraine, et al. The substances which provoke allergic symptoms will be discussed, as well as the methods of preparation and their use in testing and desensitization. Demonstrations of methods of testing will also be made. This course will be offered by Dr. R. V. Ellis, an outstanding authority on all phases of allergic diseases. The first meeting will be at 7:30 P. M., April 2nd. All physicians desiring to take this course should register at once with Dr. R. R. Price, Director, General Extension Division, 402 Administration Building, University of Minnesota.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS ON FEBRUARY 9, 1935

BY EXAMINATION
(January)

Name	School	Address
Alcorn, Kent Archibald	U. of Ill., M.D., 1931	Mayo Clinic, Rochester, Minn.
Arling, Leonard S.	U. of Minn., M.B., 1934	Swedish Hospital, Minneapolis, Minn
Arny, Frederick Phillip	U. of Minn., M.B., 1934	2117 Dudley St., St. Paul, Minn.
Baird, Lester White	U. of Ill., M.D., 1933	Mayo Clinic, Rochester, Minn.
Barr, Lowell Colvin	U. of Nebr., M.D., 1933	1213 St. Joseph, Albert Lea, Minn.
Becker, Frederic T.	U. of Minn., M.B., 1934	1335 LaSalle Ave., Minneapolis, Minn.
Bedard, Robert Edward	U. of Ill., M.D., 1934	Mayo Clinic, Rochester, Minn.
Butt, Hugh Roland	U. of Va., M.D., 1933	Mayo Clinic, Rochester, Minn.
Coffey, Robert James	Georgetown U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Dietrich, Frank Sigel	Stanford U., M.D., 1934	Mayo Clinic, Rochester, Minn.
Dry, Thomas Jan	U. of Cape Town, Africa, M.B.Ch.B., 1929	Mayo Clinic, Rochester, Minn.
Foker, Leslie Warren	U. of Minn., M.B., 1933, M.D., 1934	1134 N. E. 6th St., Minneapolis, Minn.
Foster, Frank Pray	McGill U., M.D., 1933	Mayo Clinic, Rochester, Minn.
Freidman, Louis Lawrence	U. of Minn., M.B., 1932, M.D., 1933	1767 James Ave. S., Minneapolis, Minn.
Giere, Carl Norman	U. of Minn., M.B., 1934	Midway Hospital, St. Paul, Minn.
Gunlaugson, Frederick Gunnar	U. of Minn., M.B., 1934	Miller Hospital, St. Paul, Minn.
Heise, Herbert von Rohr	Jefferson Med. Coll., M.D., 1927	259 E. Broadway, Winona, Minn.
Hertzog, Ambrose John	Tulane U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Hutchinson, James Carl	Northwestern U., M.B., 1933, M.D., 1933	Mayo Clinic, Rochester, Minn.
Johnson, Emil Waldemar	U. of Minn., M.B., 1934	St. Mary's Hospital, Duluth, Minn.
Johnson, Paul Ames	U. of Minn., M.B., 1934	Bethesda Hospital, St. Paul, Minn.
Jones, Herbert Maltby	Cornell U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Kaump, Donald Hunter	Washington U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Lundquist, Curt Wallace	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.
McClatchey, Warren Samuel	U. of Nebr., M.D., 1933	615½ 4th St., Red Wing, Minn.
McTamaney, Robert Anthony	Georgetown U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Mitby, Irvin LeRoy	U. of Minn., M.B., 1934	Miller Hospital, St. Paul, Minn.
Moberg, Clarence William	Rush Med. Coll., M.D., 1934	Swedish Hospital, Minneapolis, Minn.
Nydahl, Malvin John	U. of Minn., M.B., 1934	University Hospital, Minneapolis, Minn.
O'Neal, Buford Lee	Vanderbilt U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Platou, Ralph Victor	U. of Minn., M.B., 1933	953 Medical Arts Bldg., Minneapolis, Minn.
Ritchey, Sterling James	U. of Iowa, M.D., 1932	University Hospital, Minneapolis, Minn.
Roemer, Henry Joseph	U. of Minn., M.B., 1934	Ancker Hospital, St. Paul, Minn.
Rogers, Charles Wesley	U. of Minn., M.B., 1934	St. Mary's Hospital, Duluth, Minn.
Sanford, Hawley Seager	Harvard U., M.D., 1933	506 10th Ave. S. W., Rochester, Minn.
Schade, Frederick Louis	U. of Minn., M.B., 1934	515 Delaware St. S. E., Minneapolis, Minn.
Searles, Paul Wesley	U. of Minn., M.B., 1933, M.D., 1934	Mayo Clinic, Rochester, Minn.
Shoemaker, Rosemary	U. of Pa., M.D., 1933	Mayo Clinic, Rochester, Minn.
Thielen, Robert Dexter	U. of Minn., M.B., 1934	Ancker Hospital, St. Paul, Minn.
Turnbull, Andrew	U. of Manitoba, M.D., 1929	Mayo Clinic, Rochester, Minn.
Walch, Alphonse Edmund	St. Louis U., M.D., 1933	Minneapolis General Hospital, Minneapolis, Minn.

BY RECIPROCITY

Macey, Harry Buford	U. of Tenn., M.D., 1930	Mayo Clinic, Rochester, Minn.

NATIONAL BOARD CREDENTIALS

Fritzell, Kenneth Edward	U. of Minn., M.B., 1930, M.D., 1931	2513 Irving Ave. S., Minneapolis, Minn.

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New Series

IN THE MODERN MANNER

Introduction by

KENDALL EMERSON, M.D.
NEW YORK
Managing Director, National Tuberculosis Ass'n.

In a lecture a number of years ago the late Frederick C. Shattuck of Boston remarked that what is needed in the treatment of pneumonia is a "masterly inactivity." He had reference to the too frequent over-treatment by drugs.

Today with our modern knowledge such a suggestion would be outmoded. This is true in the handling of many communicable diseases for which active procedures have proved effective. Among these is tuberculosis. We have out-grown our former defensive attitude and are now definitely on an offensive basis. It is essential that the practicing physician be sensitive to this change in strategy.

The effective use of modern methods in combatting tuberculosis depends on the skilled cooperation of an alert and well trained medical profession. The treatment of tuberculosis is no longer a simple matter of adequate rest in bed, the proper nutrition and meeting symptoms as they develop. Each patient requires special study to select and put into service the newer procedures which are judged appropriate after careful weighing of all the factors in the individual case.

The following papers discuss certain of the modern developments in the treatment of the tuberculous and suggest indications for their employment.

TUBERCULOUS CAVITIES*

Some Features in Their Genesis, Development and Healing

ESMOND R. LONG, M.D.†

THE cavity is the characteristic lesion of chronic ulcerative pulmonary tuberculosis, and the process of excavation is the most significant of the varied pathological phenomena at play in continued spread of the disease. It opens the way for further extension within the body and at the same time is responsible for the spread of tuberculosis from the sick to the well, for in the development of the cavity countless tubercle bacilli are discharged, of which many, under ordinary conditions, are expectorated or coughed at random into the outside world.

The course of development of a once established ulcerative pulmonary tuberculosis is well understood, but there is still much confusion over the genesis of the original ulcerative lesion. Within the space of the present exposition of the phenomena of ulcerative pulmonary tuberculosis it will be futile to attempt more than a statement of the controversies involved. In the first place, while pathologists, and phthisiologists in general, are agreed that the initial manifestation of phthisis is a lesion of re-infection, occurring in the presence of an older primary infection, there is dispute as to the source of the re-infection.

One school holds that the first lesion of re-infection results from implantation of tubercle

*First Annual Boquist Lecture given at the University of Minnesota, November 23, 1934.

†Henry Phipps Institute, University of Pennsylvania.

bacilli from a focus elsewhere in the same body, transported there by the blood or lymph stream. The majority of this school trace the lesion specifically to hematogenous release of bacilli from the old primary infection or one of its metastases.

The rival school, in the ascendancy in this country today, are convinced that the process is exogenous, that the bacilli are aspirated in air contaminated by the expectoration of another person with the disease. They base their argument on evidence of a wide variety, but chiefly on the fact that modern studies with the x-ray have disclosed the early regions of re-infection most commonly in the lungs of those known to be in intimate contact with open tuberculosis.

A second matter of dispute is the location of the initial lesion of re-infection. All admit that it begins in the upper part of the upper lobe, but there is continued argument as to whether the first infiltration is in the truly apical region or in a zone some centimeters below this, commonly called "subapical" or "infraclavicular." One group, and the older one, holds that the first infiltration is in the summit of the lobe and all subsequent extension is downward. The adherents of this group maintain that, even if the first lesion is *apparently* subapical, intensive investigation, radiological or anatomical, will disclose an older lesion in the apex. The opposing group present evidence indicating that first infiltrations of the re-infection type commonly arise out of a clear sky in a region visibly well below the actual apex, and in the absence of detectable apical involvement. This group holds that subsequent extension, while likewise downward in its general course, tends to progress cranially also, with involvement of the apex.

In the present divergence of opinion it will not be worth while to attempt more than the preceding definition of the problems. We may simply note that on one significant fact all groups agree. This fact is the tendency of the first demonstrable lesions of re-infection to become excavated and furnish a new and obvious source for the further dissemination of bacilli. We may profitably pass over the uncertainties of first origins, therefore, and confine our attention to the much better understood phenomena of progression of the disease and further excavation.

Bronchogenic Tuberculosis

The spread of an established adult type tuberculosis in the lung is essentially intrabronchial. This is in contrast to the spread in the primary or childhood type of infection, which is more conspicuously lymphatic. In the adult type, expulsion of bacilli from an excavating lesion, such as that described in preceding paragraphs, and aspiration into a healthy part of the lungs, results in one of two types of lesion, depending on the dosage of bacilli and the degree of reactivity of the tissue. Large doses of the microörganisms and high states of reactivity, commonly believed to be basically of allergic nature, lead to exudative or pneumonic lesions with diffuse consolidation. When the numbers of bacilli are smaller and the immediate tissue reactivity less pronounced—the commoner situation—the result is the familiar productive lesion, often called "acino-nodular" (the term coined by Aschoff), a lesion of considerable chronicity. In ordinary advancing cases, lesions of each type are to be found, and in greater abundance below and close to the cavities from which they derive, than in the still more dependent portions of the lung (See Figure 1).

With the establishment of these new lesions, dependent, as we have seen, on the release of

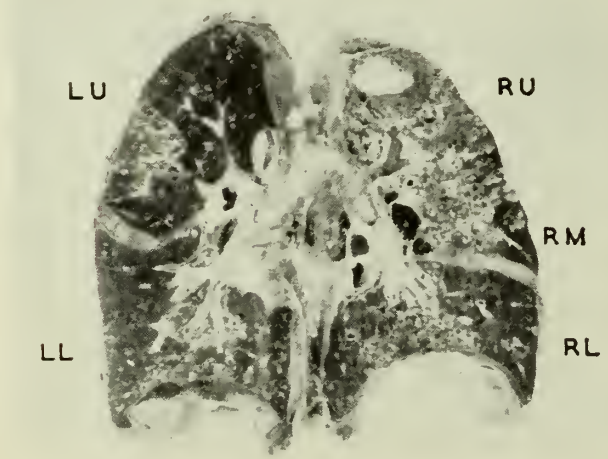


FIGURE 1

From a male colored patient, J. L., 23 years old, who was known to have had progressive tuberculosis for one year. Note the large cavity in the right upper lobe and the draining bronchus. The mucosa of the bronchus is inflamed (the red of the original is black in the photograph) from the irritating discharge of the cavity. Note the constriction of the bronchus as it passes through the cavity capsule. Bronchogenic spread is well illustrated, most intense in the upper right and middle lobes below the cavity and prominent in a fan-shaped lesion in the left upper lobe and in the terminal distribution of the bronchi to the lower lobes. Large thrombotic masses are seen in the main pulmonary arteries. Death was due to pulmonary embolism.

bacilli by excavation, a new course of cavitation is prone to occur. The new excavation is initiated by a pathological phenomenon of supreme significance, which is the root of the whole tuberculosis problem, whether in its individual or epidemiological aspects. This is the phenomenon of softening or liquefaction of the caseous tuberculous regions. If these caseous regions did not soften and discharge their contents, spread of the disease to the rest of the lung and the outside world would not occur.

Both types of lesion, pneumonic and nodular, may soften and discharge their contents, leaving a cavity (See Figure 2). The more rapid and the larger excavations occur in regions of tuberculous pneumonia. When such lesions are examined microscopically they are found to be swarming with leucocytes, so that the lesion has some of the appearance of suppuration. It is no longer commonly believed, as was once the case, that the leucocytes represent the response to a secondary infection complicating the tuberculosis. Pyogenic organisms, as well as saprophytic bacteria, are usually present, but not infrequently suitable tests fail to disclose them, while the histological picture remains essentially the same. In the process of softening in such lesions, the high concentration of proteolytic ferment from the leucocytes present doubtless plays a large part. Whole lobules may soften and slough simultaneously, or separate foci of softening may excavate and gradually coalesce by further, similar necrosis of their walls.

Softening occurs also in the more productive lesions of acino-nodular tuberculosis. Huebschmann in his comprehensive treatment of the subject of cavity formation, considered this exceptional rather than common, but it has been seen frequently in our material at the Phipps Institute (Example, Figure 3). At some spot in coalescing bronchogenic acino-nodular tubercles, commonly, if not always, close to the bronchiolar outlet, softening to a paste-like consistency occurs, with ultimate discharge of the contents. Further breakdown of the surrounding caseous tubercles occurs, with confluence of the small cavities into a single larger one. This occurs in spite of the fibroplastic reaction associated with such tuberculous lesions. Histological examination may show a considerable number of leucocytes, but equally often almost no cells are present. In any event, the number is much less than that in the acute pneumonic lesions. In many cases there is a simple, progressive liquefaction of uniformly staining, non-cellular caseous detritus.

The most significant feature of softening is the associated presence of large numbers of tubercle bacilli. As a general rule it may be stated that no tuberculous lesion in the body is as rich in tubercle bacilli as the softening focus. This fact makes softening doubly dangerous. Not only is a hole produced, opening the way to further complications, but also the discharged material possesses exceptionally high infective power.

Not all softening lesions are equally rich in bacilli. To some extent the number appears to depend on the local opportunity for growth-promoting oxygen and nutritive elements. Also, as Lurie has pointed out, it depends on the concentration of bacilli present before softening

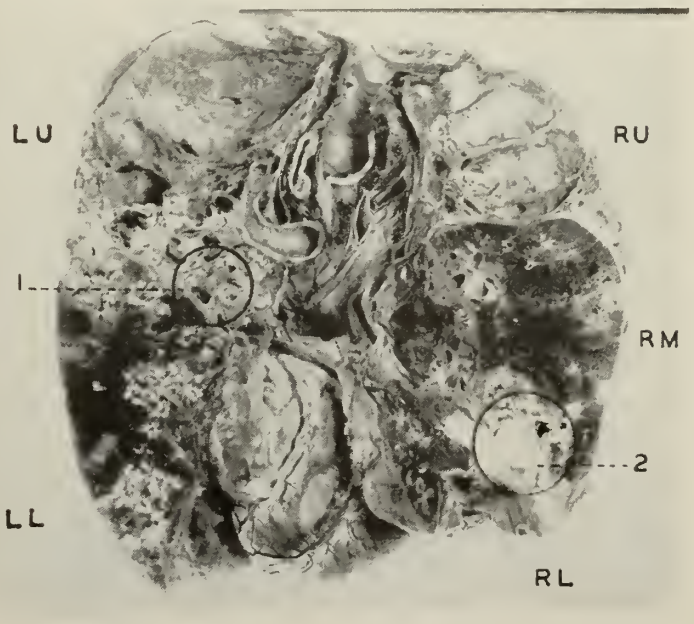


FIGURE 2

From a male white patient, W. J., 35 years old, whose clinical record indicated pulmonary tuberculosis of 12 years' progression. Note the large cavities in each upper lobe. The irregular collection of bridged cavities in the right upper lobe represent the patient's oldest known adult-type lesion. Note also the spread to other parts of the lung, presumably all intrabronchial, particularly in the central zone of the left lung, in two large spots in the left lower lobe, and in several large masses above and below the fissure separating the emphysematous right middle and the right lower lobe. Two types of early excavation are illustrated. The outlined area below the left main bronchus (ring 1) is a region of subacute tuberculous lobular pneumonia. Excavation is well under way. Microscopically the softening areas were found intensely infiltrated with leucocytes. The outlined area in the base of the right middle lobe (ring 2) is a region of confluent chronic caseous tuberculosis, believed to have been originally bronchogenic and acino-nodular. Note the beginning softening and excavation. Histological sections showed the softening tissues in this region to be practically cell-free.

occurs. His experiments at the Phipps Institute indicate that the softening process affords new opportunity for growth to whatever bacilli are present. Hence the final number has some relation to the original concentration.

In the Phipps Institute material we have noted also a fairly close correspondence between the number of tubercle bacilli in the softening areas and the clinical course as revealed in the premortem records. In cases of exceptional chronicity, lasting ten to forty years, the number is, on the average in the various softening lesions, not high. Considerably greater numbers are found in the common more acute cases, where the duration of the disease appears to be only one or two years. Extraordinary masses of bacilli are often found in the extremely acute cases of only a few months duration. In our observations the latter situation is frequent in young colored patients with rapidly progressive tuberculosis. These histo-pathological observations agree well with the quantitative differences in bacillary concentration in the sputum of patients of these three general types.

As a rule the softening occurs at a point close to an open bronchiole, a fact suggesting the possible importance of oxygen in the phenomenon. When the softening reaches a certain degree, the movements of respiration lead to expulsion of the contents. This at once exposes the patient to grave danger of spread. A glance at Figure 3 will show how the liquefied material may drain into open bronchioles, which lead in turn to larger bronchioles and bronchi supplying healthy parts of the lung. The consistency is commonly such that the softening matter does not flow freely into all parts of the lung. It is only semi-liquid, and because of its irritating effect on the bronchiolar mucosa it gathers mucus as it goes along. Ciliary motion and expiration carry the accumulating mass forward, while inspiration carries it back. When the mass passes the angle of a bifurcation of the bronchial tree, aspiration to the region tributary to each bronchiole becomes possible. Because of this manner of progression, the lesions secondary to the liquefaction are likely to be in the immediate neighborhood of the softened area. Their course tends to be like that of the region from which they were derived. They too are prone to soften and discharge, with production of new regions of excavation. Finally the intervening tissue gives way and the cavities coalesce. If their course of development has been slow, considerable remains of the old structures in their walls may persist, as bridges and ridges traversing the cavity. These represent resistant structures like obliterated blood vessels and bronchi, and condensed, fibrotic lung tissue that had previously formed the capsules of some of the more slowly developing cavities.

The continuous coalescence of new cavities with the old keeps the parent cavities infected with tubercle bacilli. In general, however, their walls are not nearly as rich in bacilli as the freshly softened regions. When a whole lobe is excavated and no opportunity remains for further addition of recent cavities, tubercle bacilli are relatively uncommon in the cavity walls. Yet, as long as they open freely into draining bronchi, they remain a source of infection for the rest of the

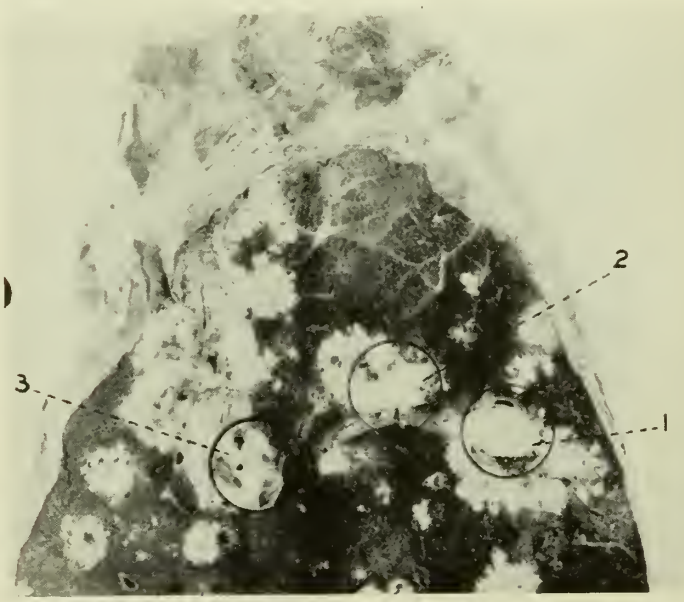


FIGURE 3

From a male white patient, A. S., 29 years old, with progressive tuberculosis of one year's known duration. The region illustrated is the apex of the right lower lobe. Three regions of softening of typical bronchogenic, acino-nodular tuberculosis are outlined. The softening regions marked 1 and 2 drain directly into an easily seen bronchiole. Note the small thrombus above region of softening number 1. This illustrates the manner in which hemorrhage is prevented. The outlet from region 3 (above the softening) was apparent in the gross specimen, but is not easily seen in the photograph. Histological sections were made of the region numbered 1. Completely acellular caseous tissue was found, swarming with acid-fast bacilli. Further softening of the tuberculous regions around 1 and 2, with further aspiration into adjacent tissue, might have been expected had the patient lived, with confluence and the production of a gross apical cavity in this lobe.

lung, in degree proportional to the number of bacilli in their walls.

Needless to say, aspiration of infective material, while most intense in the neighborhood of the cavity, is not confined to this region. According to the fluidity of the material discharged, the rapidity of discharge, the event of hemorrhage, the intensity of respiratory movement, etc., more or less of the infective matter is aspirated into more remote parts of the lung, with establishment of distant foci (See Figure 1, in which tributary relationship to bronchi is readily apparent). At the same time much is coughed up into the mouth and expectorated or swallowed. As the amount increases with progression of the disease, the upper respiratory and alimentary tracts are subjected to greater and greater dosage, and eventually such complications as tuberculous laryngitis and tuberculous ulceration of the intestine supervene.

Finally, with every unimpeded cough, with every careless expectoration, bacilli from the softening masses and formed cavities are likely to be projected into the surrounding air, where the material ejected may infect other people and start the train anew.

Healing of Tuberculous Cavities

Enough has been said to indicate the grave dangers attendant upon tuberculous excavation of the lungs, both for the patient himself and for those around him. It must not be supposed, however, that excavation invariably leads to the train of events just described. Recovery from cavities is constantly taking place. This may be complete in the sense that the disease of a patient with positive sputum becomes completely arrested and no further discharge of bacilli occurs, or it may take place in some cavities of active tuberculosis while other cavities enlarge and the disease as a whole pursues a progressive course.

It must not be forgotten that every person with positive sputum has, technically, at least one cavity. This may be microscopic in size, far too small to be designated on either clinical or gross anatomical grounds a true cavity. But histo-pathologically the minute ulcerative lesions are fundamentally of the same nature as the large excavations making up the picture of advanced phthisis. We are aware, through our clinical records, of many such cases, but the number of never recognized cases is probably vastly larger. Healing in these cases is presumably due to obliteration of the draining outlet and eventual scarification.

In general these two processes, obstruction of egress and scar tissue replacement, are the main processes concerned in the healing of cavities. Obviously, healing in this case does not signify a restitution to the original anatomical state.

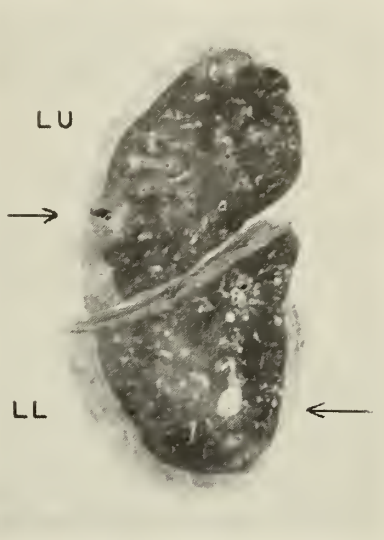


FIGURE 4

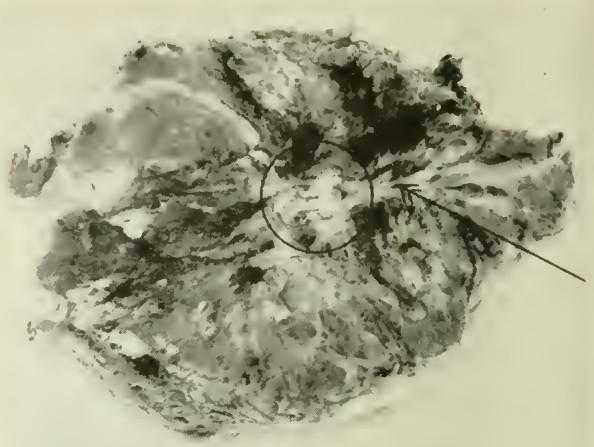
From a white male patient, 40 years old, with tuberculosis of unknown, but undoubtedly long standing in the opposite (right) lung. Two cavities are present, of different pathologic-anatomical origin. That in tbe left margin of the upper lobe represents rapid liquefaction of an acute bronchopneumonic tuberculosis. Compare this in location with the bronchogenic lesion in corresponding region in Figure 1. Aspiration from a heavily infected lung to the far side of the opposite lung at the level of the main bronchus is a common event. The cavity in the lower part of the lower lobe, as thorough histological study showed, is a lesion derived originally from chronic caseous and fibroplastic acino-nodular tuberculosis. It is a healing cavity with its bronchiolar outlet almost completely obstructed by fibrous constriction and final plugging of the remaining pin hole size opening by detritus. Tubercle bacilli were numerous in the contents, but failure of drainage is indicated by the absence of fresh secondary lesions in the neighborhood. Old healed lesions were found connecting with the cavity. This cavity represents a much older lesion than that in the upper lobe, and was presumably the result of an early dissemination from the very old lesion in the upper lobe of the opposite lung.

The healing of excavated areas may be by complete closure or by simple arrest of activity without closure or complete obliteration of outlet. Healing may also be spontaneous or induced by proper therapy. There is a limit to the size of the cavities healing by complete closure. Probably this limit is in the neighborhood of a centimeter in diameter.

In the cases of spontaneous healing of small cavities, the first event favoring closure is probably obliteration of the bronchiolar outlet. This may be from obstruction by thick mucus and cellular or necrotic detritus, or it may result from productive inflammation and scarification. In either event the danger of further infection of the neighborhood by intrabronchiolar spread is eliminated. At the same time the ingress of air is prevented and air already in the cavity is absorbed, so that

FIGURE 5

From a white, male patient, 54 years old. The specimen was taken from the apex of the lower lobe. It is a healed cavity in a lung that was still the seat of active tuberculosis. As histological studies showed, no active tuberculosis remained in the wall of this cavity, although fresh tubercles derived from ulcerative tuberculosis elsewhere, were present in the neighborhood. The contents of the cavity are inspissated and chalky, and the bronchus to the right (marked by an arrow) was largely obliterated by a chronic inflammatory process, and finally closed by accumulated detritus.



the walls tend to approximate. A continuation of granulation tissue development strengthens the capsule and leads gradually to replacement of the necrotic debris, retained in the cavity, by connective tissue. The end result is a scar a few millimeters in diameter. I venture to say that, if lung apices from non-tuberculous cases were more commonly examined with such possibilities in mind, a good many probable cases of this nature would be uncovered. McPhedran and I have observed one typical case of known clinical history, where the anatomical picture five years after the sputum had ceased to be positive suggested such a course as that just outlined.

In larger regions of excavation such a sequence as described can hardly occur. The outlet is too wide to be easily obstructed, and a thicker capsule, and often pleural adhesions, prevent collapse. Hence spontaneous healing of large cavities is rare. Healing may be facilitated by therapeutic measures directed toward pulmonary collapse, such as pneumothorax. It can hardly be expected that the large, stiff outlet can be closed, but tension enlargement by inspiration can be stopped, expiratory ejection of infective material can largely be prevented, the outlet can be plugged in this way, and some approximation of walls can be effected. All of this gives time and opportunity for scar tissue growth, which may eventually obliterate the cavity. Needless to say, any procedure hindering respiratory motion of the lungs tends to prevent expulsion of liquefied infective material and aspiration into other parts of the lung.

Finally, large cavities may "burn out." The cavity may become so well encapsulated that nothing but connective tissue and an air space remain. A thin internal membrane of necrotic cells persists, but occasionally this internal wall no longer supports the growth of bacilli. Such examples are rare, but they are occasionally seen as solitary cavities where tributary lesions have healed by scarification, and somewhat more commonly as huge hollows separated from a still active tuberculosis by thick capsules or thickened, fused interlobar fissures. Commonly the bronchiolar outlet is extremely constricted. Such cavities scarcely merit the designation "healed," but at least they are no longer a grave menace to the patient, and, while conspicuous in the X-ray film, are of much less significance for the further course of the disease than lesions below them, still in the stage of softening and rich in tubercle bacilli.

INTRAPLEURAL PNEUMOLYSIS BY THE CLOSED METHOD*

RALPH C. MATSON, M.D.
PORTLAND, OREGON

SEVERING adhesions by closed intrapleural pneumolysis often defers the necessity of a thoracoplasty by converting an unsatisfactory pneumothorax into an efficient one. It is a pivot upon which momentous issues depend. Hence, the polemic attitude concerning this much disregarded operation should be supplanted by a more intelligent appreciation of its value. A three to five month's trial of artificial pneumothorax will determine whether the lung collapse is satisfactory or whether pleuritic adhesions are preventing adequate collapse, which is evident in about 60 per cent of cases where artificial pneumothorax is indicated.

In utilizing the galvanocautery for severing adhesions, the danger of complications, such as

*Prepared especially for THE JOURNAL-LANCET.

bronchopleural fistula and empyema, are greatly increased; likewise, the problem of hemorrhage can assume drastic proportions. These undesirable characteristics are tremendously diminished by the electrosurgical method, as described in my previous publications. The occurrence of severe febrile reactions and bronchopleural fistula have been reduced to a minimum. The incidence of empyema also has been reduced from 26.4 per cent to aproximately two per cent in changing from the galvanocautery to the electrosurgical method. Hemorrhage is no longer a factor—while slight bleeding may occur sometimes, it can be arrested and need no longer intimidate the surgeon with the grave possibilities that are always impending upon the question of improper hemostasis. A general opinion is prevalent that only adhesions very diminutive in size can be cut, as, for instance, those having the dimensions of a finger. But I have often been successful in severing adhesions the breadth of an average man's hand without occasioning bleeding or other serious postoperative complications.

The patient experiences very trivial reaction from the operation when the electrosurgical technic with special electrodes, which I have devised, is employed.

A careful study of roentgen films is made preliminary to operation to ascertain the position of the adhesions to be severed. One of the most significant factors of intrapleural pneumolysis is the accurate introduction of the thoracoscope and operating instrument, which must be done with the most accurate precision, since obtaining an unrestricted view of all surfaces of the adhesion is essential to permit its successful severance.

The operator must have an intimate knowledge of the anatomy of the pleural cavity as well as the construction of adhesions, for adjacent tissues which appear to be of no consequence may actually sheath blood-vessels of dangerous size, and cutting into them accidently would be disastrous. Owing to their deceptive appearance, these important structures are only recognized by careful thoracoscopic study.

A pneumothorax should not be continued when it is obvious that adhesions are impeding its success. The patient is too often subjected to a lengthy routine of useless pneumothorax therapy, thus being denied other methods of providing added rest to the lung (intrapleural pneumolysis) and often causing the disease to extend to the larynx and intestines, the most desperate measures of treatment being then unavailing.

We have had most impressive results from this effective operation. Approximately 80 per cent of a series of over 250 cases, who had an unsatisfactory pneumothorax, and mostly bed cases, have had their penumothorax converted into a successful one and are working.

THORACOPLASTY*

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THE ONLY real advance in the treatment of tuberculosis over the past quarter century is found in the different forms of compression therapy. Any factor that tends to rest a tuberculous part is conducive to healing of the diseased area. Compression treatment simply adds, in a highly specialized way, to the old idea of bed rest for all cases of tuberculosis. Nor does this form of treatment in any manner negate the necessity of rest. It does, however, lessen the time necessary to effect a result, and also lessens the danger incident to an open tuberculosis.

For years radical surgery was looked upon as the advice of the fanatic, and the conservative was reluctant to offer to his patients this means of treatment.

With improvement in technique and with greater experience, thoracoplasty has now become a recognized form of compression therapy.

In my opinion, it must not be used in lieu of pneumothorax, except in a small percentage of cases. I can conceive where apical cavities exist, with the remainder of the lung practically normal, it is far better to do an upper-stage thoracoplasty, removing the first three ribs completely, than to collapse the entire lung by pneumothorax. But in the majority of patients a pneumothorax is far more preferable where it can be made complete. Otherwise it is of no value and a thoracoplasty should be advised.

The present day thoracoplasty is far superior and far safer than the original operation. The O'Brien technique of removal of the first three ribs in their entirety, even to taking off the transverse process on the spine and also the costal cartilages, permits of far greater collapse, and has markedly increased the chances of cavity closure. Today one can recommend chest surgery with as much assurance of success as one can recommend any of the major surgical procedures.

To think of tuberculosis and the tuberculous patient from a purely medical standpoint is to admit a profound lack of knowledge of the present conception of the disease. There probably

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is no one disease in which such radical changes in treatment have occurred. The literature is filled with compression therapy articles, and yet there is an appalling number of men in the profession who are ignorant of the first principles of this type treatment and apparently not the least interested. The general practitioner to whom the patient comes first should so familiarize himself with the latest methods in treatment that he can give his patient the benefit of intelligent advice. The days of treating tuberculosis by means of bed rest, three meals a day, and the product of the cow in excessive doses, is a relic of the past. Such advice should be met by a revocation of license to practice medicine. The tuberculous individual is deserving of as much thought and study as the patient with an acute appendix, and the physician who through ignorance neglects to give his patient the best that is known regarding the treatment of tuberculosis is negligent in his duty and does not deserve the respect of his colleagues nor the confidence of his patients.

RECENT TRENDS IN THE INDICATIONS FOR PNEUMOTHORAX*

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NOT SO many years ago therapeutic pneumothorax was looked upon as a very delicate operation to be performed by a chosen few physicians on a relatively few selected cases. The advancement in our knowledge concerning the various phases of pneumothorax, together with the growing popularity of the procedure based on its simple technique, the ease with which it can be performed, and its tangible results, have led to its universal use.

The general practitioner is now, more than ever, eager to learn the newer ideas regarding various phases of treatment, such as, indications, technique, management of the pneumothorax patient, frequency of refills, amount of air to be injected, duration, effectiveness of the treatment and the end results.

An important trend in pneumothorax therapy is the broadening of the indications for pneumothorax. The history of pneumothorax reveals that recognized indications for this form of therapy were few in number. With the exception of uncontrollable hemorrhage, a unilateral progressive lesion was the only other excepted condition which called for this treatment. However, due to the fact that the majority of patients who were admitted to sanatoria for treatment had *bilateral lesions*, the phthisiologist was forced to experiment with this type of case instead. The side with the more extensive pathology was collapsed and the lesser pathology in the contralateral lung was disregarded. Time has verified the wisdom of this procedure and today in every sanatorium will be found cases under collapse therapy that fall in this category.

The high mortality in the extensive bilateral fibro-ulcerative cases challenged the clinicians to experiment still further for the purpose of saving life, and *bilateral pneumothorax* was tried leading to favorable results.

An indication for pneumothorax which is gradually gaining recognition is the indigent, uncooperative, positive sputum patient with long standing chronic fibroid tuberculosis who is a menace to the community. His mild symptoms do not prevent him from accepting employment as a waiter or a cook thus disseminating the disease. Pneumothorax frequently encourages such individuals to remain under treatment longer, leading to the possibility of not only lessening expectoration but rendering the sputum free of tubercle bacilli.

For many years the practice has been to start initial pneumos in a hospital or sanatorium and continue refills in the sanatorium while the patient is under bedrest treatment. However, due to an acute shortage of sanatorium beds in the larger cities, attempts were made to discharge the symptomless pneumothorax cases from the institutions and to continue the refills in centrally located pneumothorax stations.

Recently attempts have been made in some cities to initiate pneumothorax treatments in refill stations in ambulant tuberculous patients who have not had the benefit of bedrest treatment either at home or in a sanatorium. The advisability of such a procedure is debatable. There are many physicians who believe that this is a dangerous practice which may lead to very disastrous complications, an opinion which is shared by the writer.

Myers[1] in a relatively recent article relates his experiences with collapse therapy in such patients. His results are encouraging. No doubt, such favorable results will encourage more widespread use of this procedure.

The chest specialist of today has extended the use of pneumothorax further to such non-tuber-

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culous diseases as pyogenic lung abscess, bronchiectasis and more recently to pneumonia. As a therapeutic measure in relieving pleural pain it is not infrequently used. Recently the writer was able through this procedure to control the severe pleural pain in a Hodgkins disease. As a diagnostic measure for the purpose of locating tumor masses, it has been proved invaluable.

Obviously, as in the past, there will be trends in pneumothorax therapy in the future. That there are recent trends in phases of pneumothorax treatment other than discussed in this paper cannot be denied; however, the space allotted for this article prohibits a discussion of recent trends in such phases of pneumothorax as those dealing with the principles and technique of pneumothorax treatments and those dealing with the general management of the pneumothorax patient. University Club Bldg.

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TUBERCULOSIS AS A STUDENT HEALTH PROBLEM*

H. D. Lees, M.D.†

IT IS encouraging to observe the development of definite programs for the control of tuberculosis in so many universities and colleges during the past three or four years. Certainly tuberculosis stands out as one of the major health hazards of the university student. Too frequently in the past we have encountered students who have come to the Health Service because of rather marked symptoms and examination revealed the presence of pulmonary tuberculosis. Many of these students had advanced disease and were obliged to at once give up their university work. In my own experience, quite a number of these young people have never been able to return to the campus.

As a result of such experiences, numerous institutions throughout the country are now attempting to meet this problem by the routine use of the tuberculin test and chest X-ray. In most instances, since the work must be financed entirely from student health fees, the programs developed have necessarily been rather limited in scope. I know of no institution which is carrying on at the present time a program which might be considered ideal for the control of tuberculosis in its student body. The procedure which has been most commonly adopted limits the tuberculosis survey to the entering freshman class. The tuberculin test is applied to all new students as a part of the entrance physical examination and chest X-rays are provided for the positive reactors. By this procedure all cases of pulmonary tuberculosis in the incoming group should be detected. If a student is found to have the disease in an advanced or infectious stage, he is advised to undergo treatment at once, thus eliminating from the student body a source of real danger. Students presenting minimal, healed, or inactive lesions may often be kept under close observation and their activities limited as may be indicated through careful study of each individual case.

Such a program has been carried on at the University of Pennsylvania since the organization of the Health Service in 1931. We have now completed a survey of four entering groups, having X-rayed during this period approximately two thousand freshmen. Although we feel that it is distinctly advantageous to carry on this routine procedure with our entering freshman group, our experience indicates very clearly that such a program is entirely inadequate insofar as actual control of tuberculosis among our students is concerned. This is evidenced by the fact that we have discovered almost as many cases of tuberculosis as a result of the student having come to the Health Service because of symptoms as we have through the use of routine X-rays. Of sixteen students diagnosed as pulmonary tuberculosis as a result of investigation of symptoms, thirteen have had to discontinue their university work at once and the majority of these have become sanatorium patients. Of eighteen cases of tuberculosis discovered as a result of the routine chest X-ray, only one has thus far had to withdraw from the university. It is worthy of note also, that during this entire period only one freshman has been included in the relatively large number of students who have had to cancel out of the university to undergo treatment.

Recent statistics reveal the fact that tuberculosis mortality in males 20 to 24 years of age, is more than double the rate which prevails in the age group 15 to 19 years. The sharpest rise in the incidence of tuberculosis occurs between the ages of 19 and 24 years. Certainly the problem as we have found it at the University of Pennsylvania is in keeping with the above. Most of our cases are found among upper classmen and especially those students enrolled in schools

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on the graduate level. We feel therefore that our program, to be most effective, must be extended so as to provide annual chest X-rays for all members of our student body who react to tuberculin. We realize that a negative chest X-ray obtained at the time of the student's entrance to the university is by no means a guarantee that he will remain free of tuberculosis for the duration of his college course. This fact is emphasized by our observation of the development of tuberculosis in a group of students who had previously been shown by X-ray to be entirely free of the disease. One student presented a definite tuberculous infiltration five months after a negative chest X-ray. Slight but suggestive symptoms were present. Two cases have been discovered after an interval of six months following negative chest films; one case after eighteen months; three cases after twenty months; and three cases after an interval of two years. Only one of this group of ten students was symptom-free and eight of the ten have received sanatorium treatment. In no case was there a history of symptoms having been present for a period as long as eight weeks. It should be emphasized that in a majority of such cases the pulmonary lesion has become decidedly dangerous in character and extent by the time definite symptoms have made their appearance.

Due to a restricted budget for the present school year, we were faced with the problem of X-raying approximately 1,075 students with an appropriation of $1,300.00 available for the purpose. Naturally, stereoscopic films, as we had formerly used, were out of the question. Moreover, our funds were insufficient to permit the use of a single celluloid film at a cost of $1.50 per student, although this is a very reasonable figure for such a service. The paper film and X-ray survey service recently developed offered the only solution to our problem, since it provided the only means by which we could continue our X-ray work and still keep the cost within the limits of our budget appropriation. Several months before our annual survey was to be conducted, fifty students of my selection were X-rayed who presented various types of chest pathology. In all these cases we had recent stereoscopic films so that we knew exactly the type and extent of the various lesions. Although quite a number of the students making up this test group presented extremely minimal lesions, the paper film did not fail to reveal the essential detail in a single case. There was no difficulty in arriving at an accurate diagnosis after viewing the evidence presented on the single film.

We therefore made use of this service last fall in X-raying all of our medical students as well as all members of the freshman class who were positive to tuberculin. The X-ray equipment was set up on the main gymnasium floor so as to provide ample space and to eliminate crowding and confusion. Students were given appointments at the rate of ten every five minutes and 1,086 students were X-rayed in eleven hours. The total cost for the entire group was $814.50. As a result of this survey there were detected nine cases of pulmonary tuberculosis, an incidence of .83 cases per hundred students examined. Latent childhood tuberculosis, as evidenced by calcified nodules in the lung parenchyma or calcification of the tracheo-bronchial lymph nodes, was present in 10.4 per cent of cases. Other pathologic conditions such as cardiac, bronchiectasis, pleurisy, etc., were, of course, revealed in a number of students. In all instances where the single film showed a tuberculous process, the student was at once re-rayed, using stereoscopic films. This procedure was also followed in the case of all suspects as well as in those cases where there seemed to be any question as to whether or not the single film was entirely negative. In this way permanent stereoscopic films are available as a matter of record and for comparison with later serial films.

As a case-finding procedure, the use of the single paper film holds distinct advantages over the combined method of physical examination and fluoroscopy. Of the nine cases of pulmonary tuberculosis discovered in this survey, five were missed entirely by physical examination. Four of the nine show no suspicious shadows on the fluoroscopic screen although they have been repeatedly examined by this method. However, all of the latter group are undoubtedly of recent development, being visualized on the X-ray film as light, soft infiltrations with a total absence of fibrosis. Moreover, this group typifies the ideal result which we are striving for in our attempts at tuberculosis control, i.e., the detection of the disease before it has produced sufficient damage to the lung tissue to result in abnormal physical signs and before the patient develops symptoms. In a majority of these cases the diagnosis will be definitely established only by the aid of the X-ray.

TUBERCULOSIS IN COLLEGE STUDENTS, WITH SPECIAL REFERENCE TO TUBERCULIN TESTING*

ESMOND R. LONG, M.D.†

IN SPITE of continued effort to induce colleges to include special effort aimed at the eradication of tuberculosis in their health programs, certain among them are still woefully backward in their response, and seriously neglectful accordingly.

A single example will illustrate. A few weeks ago in a fraternity house in one of our well known colleges a boy came into the wash room where several other boys were arranging their toilet, coughed and spat up several mouthsful of blood into the washbowl before their eyes. He was naturely disturbed and asked the boys what they supposed was the matter with him. Knowing nothing about it, but willing to joke on any subject, they solemnly assured him of the worst and sped him on his way to the college physician, who discovered that the worst was indeed true and the boy had moderately advanced tuberculosis.

The point of this true story is that the college, although it has a health service well developed in most respects, had no preventive program that would have discovered tuberculosis in its very early stages. Many physicians are apparently still unaware that pulmonary tuberculosis is essentially symptomless in its origins, or at least begins with symptoms no more characteristic of it than of other respiratory infections, and is very commonly devoid of physical signs. Presumably, unless this boy's case was exceptional, for months before he had his hemorrhage the disease could have been detected by x-ray examination, and measures could have been instituted to stop its progress. And, it must not be forgotten, the contact between the boy and his fellows could have been broken and possible spread of infection prevented. Tuberculosis characterized by hemorrhage is ulcerative tuberculosis with tubercle bacilli in the sputum. Indeed at the stage of first excavation they are extraordinarily numerous.

In considering tuberculosis from the standpoint of the college it cannot be overemphasized that the college has at the same time an obligation and an exceptional opportunity. The college age is the age of opening susceptibility to adult type tuberculosis. The fifteen year period of apparent relative immunity (as reflected in our death rates) is over, and the fatal excavating processes begin to make their appearance. But it takes a long time in most young men to carry the disease even to the stage of clinical severity.

And therein lies the peculiar opportunity of the colleges. During the period when the disease is minimal, but slowly progressing, it may be detected if not by physical signs, by x-ray. If the boy with potential tuberculosis feels no urge himself to consult a physician—and he probably will not—the physician must go to him. This may appear to violate some of the fundamental principles of our age-old concepts of the physician-patient relationship, but times are changing rapidly in this and other respects, and the tuberculosis will not wait until the ethics of the situation are properly settled. The simple fact is that the disease can be recognized in the course of the right kind of routine examination long before the boy recognizes that anything is wrong and takes the conventional steps to do something about it.

The ideal program for locating cases of tuberculosis in the colleges at the present time is a combined one of tuberculin test and x-rays. The negative reactors are screened out by tuberculin and the positive reactors are examined roentgenologically. In many of our eastern colleges, where the infection rate is relatively high, tuberculin tests are dispensed with, and the x-ray examination is begun directly.

This system fails to determine the tuberculosis situation in the college from the standpoint of infection, although if the figure for positive x-ray films is multiplied by four or five, the result obtained is not far from that which would have been obtained by tuberculin testing. The active cases are discovered, and the potential ones also, boys are removed from school if necessary, and others are put under observation.

In the Middle West two-thirds to three-quarters of the students do not react to tuberculin. Considerable expense is saved by finding the infected students by tuberculin-testing the whole group, and x-raying only the positive reactors. This system furnishes exact information on the extent of tuberculous infection in the group under consideration, and sometimes calls attention to cases where a contact of potential seriousness, not revealed by the x-ray routine, can be broken.

If we speculate a little, we may foresee an increasing use for this type of program. It is not merely possible but probable that as the cases with positive sputum are discovered more generally, and at an earlier date in the course of the disease than formerly, and disposed of in sanatoria or under other appropriate care, the amount of contagion to which our communities are exposed will

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†From the Henry Phipps Institute of the University of Pennsylvania.

be greatly decreased and our boys and girls will enter colleges, not 25 per cent or more infected, but ten per cent or less. If 95 boys out of a hundred fail to react to tuberculin, x-raying all the student body, while always furnishing useful information, from the standpoint of tuberculosis will be a quite unnecessary expense.

Recent Results of Testing with Standardized Tuberculin

With this prospect of increasing value of tuberculin testing, it has seemed to some of us the right time to make whatever improvements are possible in the character of tuberculin. It is now well known that Old Tuberculin, as manufactured, is a variable product, and while most market preparations are of sufficient strength, some are not and a few are so strong as to cause an unwarranted number of severe reactions. Standardization seems desirable. Old Tuberculin is a solution of unknown strength, of an active principle responsible for the reaction. Logically the active principle should be isolated so that solutions of known strength can be used.

As most of you know, the National Tuberculosis Association, through its Committee on Medical Research, has fostered an investigation with this end in view. A product has been made available under the name Purified Protein Derivative, that represents the active principle of Old Tuberculin in as highly refined form as it is at present possible. The cost of this has naturally been high as compared with unrefined Old Tuberculin, because of the complex technic necessary to obtain it, but it will be made available through the State Tuberculosis Associations after January 1, 1935 at a figure considerably below the present price.

Within the four months that this standard tuberculin has been available for survey work it has been employed on a gratifying scale in the colleges. Through the kindness of the directors of several student health departments and their associates, I am able to report figures at this time for colleges in several sections of the country, based on about eight thousand tests. These are given in Table 1. It must be recognized that they are only approximate, however, as in almost every instance an appreciable proportion of the students injected, for one reason or other, failed to return for reading of the test, and the figures given therefore represent an involuntary selection. Correction has been applied in some cases, but the necessary data were not available in all.

TABLE 1

TUBERCULIN TESTS (PPD) IN AMERICAN COLLEGES AND UNIVERSITIES (AUTUMN 1934)

College—	Number Tested	Per Cent Reacting
California	155	59.0
Stanford	129	45.0
Oregon	645	22.6 (first dose)
Kansas	1301	25.9
Wisconsin	3010	26.2
Michigan	428	24.8
Agnes Scott	190	29.0
Pennsylvania State	1353	43.0
Haverford	99	60.6
Pennsylvania	798	48.0
Connecticut College	200	40.5

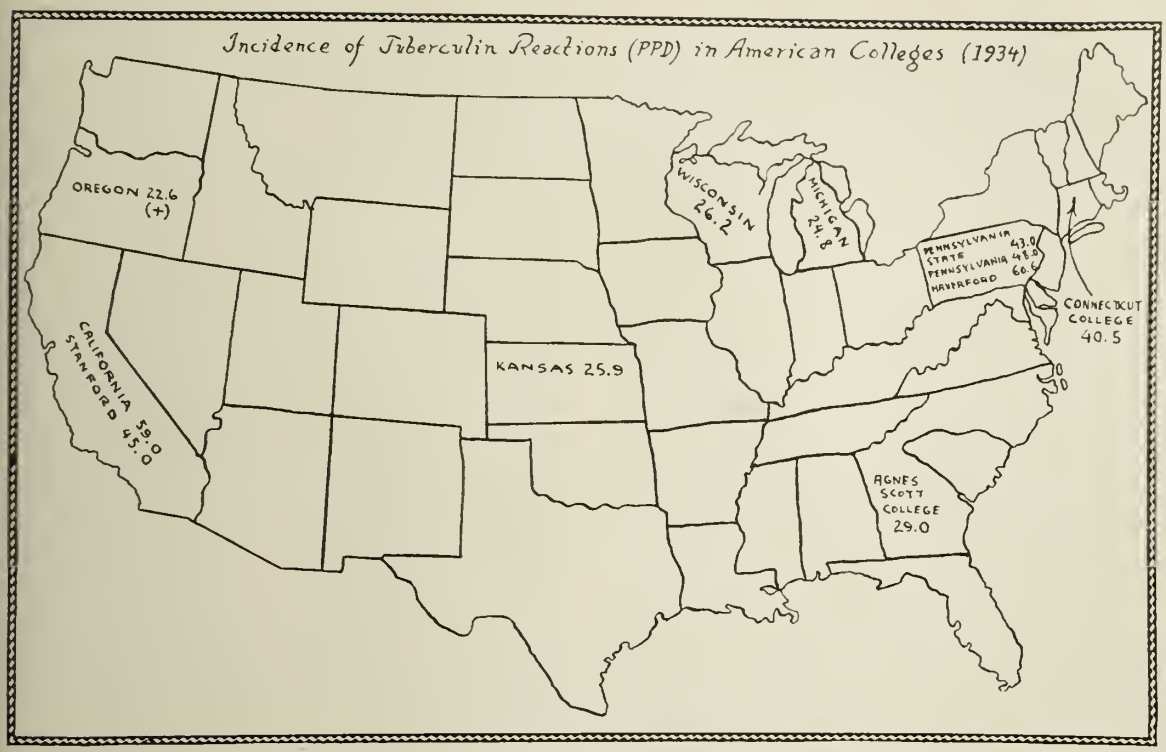
When the figures are mapped (Figure 1), an interesting fact becomes apparent. The country may be divided into three or four belts on the basis of infection in the colleges. Admittedly the college figures do not represent perfectly the infection incidence for their respective states, even at the social level of the college student. In attendance at the University of Pennsylvania, for example, are students from every state in the Union and all the territories and island possessions as well. Yet the majority of the students in the colleges listed come from the immediate neighborhood.

The belts noted are one on the western coast, with a relatively high rate of infection, one in the Middle West with a low one, and one on the eastern coast with a high one again. Insufficient figures are available for the south. The same belts are distinguishable on the basis of Old Tuberculin tests of previous years. It is interesting in this connection that Dr. Stiehm at the University of Wisconsin, in a most comprehensive survey, to be reported by him in detail later, discovered that, while students from the surrounding Middle-western states in attendance at Wisconsin had approximately the same rate as the Wisconsin students, a group of sufficient size for statistical purposes from the Atlantic seaboard had a much higher rate, much like that seen in the eastern colleges.

In a previous publication I have attempted to explain the high rate of the Atlantic seaboard and far west as due to greater population, more extensive contact and long established centers of tuberculosis in the former and a high proportion of tuberculosis contacts in the latter from families that had moved to the west coast in the last two or three decades on account of tuberculosis in one member of the family. Doubtless there are other factors, but these probably account for part of the difference between these regions and the relatively uncrowded Middle West.

Difficulties in Tuberculin Testing

From the reports furnished by those in charge of tuberculin testing in the various colleges it is apparent that there are two chief, overlapping, difficulties. The first of these is getting the students back for examination after the injections. The student age is happy-go-lucky, and there are many conflicting obligations. In the last analysis



everything depends on the spirit of the organization sponsoring the test. If the students are allowed to believe it is not of much importance, many will not put themselves out to return for the reading. If they understand its importance and the fact that it is for their real good, they will come.

In this connection may I cite the experience at a college near Philadelphia where I have helped carry out the tests for the last two years. The freshman class, averaging about a hundred, was tested each of those years and in neither year did a single boy fail to return for reading of either the first or the second test. The organization of the testing is in the hands of a dean who runs the test with a mixture of genial cajolery and ferocious threats that is extraordinarily effective. The test of this group lasts only about thirty minutes on each of the three days of injection and reading, and the students have learned that at the most it is only a minor annoyance in their life of greater things.

The second objection comes from the physicians as well as the students; it is the inconvenience of the two dose method. We have been repeatedly asked if we cannot develop a tuberculin that will detect all cases in a single test. In answer, it can only be said that we can modify tuberculin at will, but we cannot change the human constitution. People infected with tuberculosis, for constitutional reasons, vary in their sensitivity to tuberculin about a million times. A dose that will barely elicit a reaction in one will cause superficial necrosis in the arm of another. Many physicians know this, and have frankly compromised with an intermediate dose causing moderately severe reactions in some and missing some reactors altogether.

A few have had the daring to use the larger dose without screening out the excessively sensitive students with the smaller dose. One of the college physicians to whom I am greatly indebted for cooperation, R. H. Stiehm, has furnished me with figures for the two dose method and the one large dose method. Each one presumably detected all the reactors. In nearly three thousand students tested by the two dose method there were 431 reactors with 3 cases, or less than 1.0 per cent, of four plus reactions. In 274 cases where the second dose only was used, 64 reactors were discovered, with 6 four plus reactions, representing 10 per cent of the reactors.

Naturally physicians must follow their own judgment, but the certainty of the two dose method with its freedom from severe reactions seems to me to make worth while the extra effort in its application.

Results

The results to be expected from the ideal tuberculin x-ray program are definite. In every large

survey cases of active or possibly active tuberculosis are discovered. The figure commonly runs about one per cent of the students examined. The cases discovered are usually in the minimal stage, and ordinarily modified life or sanatorium treatment or its equivalent suffices to arrest the tuberculous process in a relatively short time, much shorter than the average period required for a moderately advanced case. The cases are usually symptomless on discovery. Occasionally open cases are detected, which are a menace to the student body.

In addition to such cases a larger number are found in which the physician must be on his guard. In such cases further observation and later x-ray films are indicated, and it soon becomes apparent whether the lesions seen are stable or unstable and progressive.

The saving of these few cases probably warrants the expense and effort of the whole procedure, but this saving does not constitute the entire value of the program. Much of educational value, for the student and the college, comes out of it. The student, who, in the surge of youth, is wasteful of his strength, learns enough to give him some concern. And the college gathers figures that are useful for epidemiological work in its own environs and sources, and of research value for the preventive program of the country.

VALUE AND LIMITATION OF X-RAY IN THE DIAGNOSIS OF CHEST DISEASES*

J. Arthur Myers, M.D.
Inez Torp,

BECAUSE of the relatively large size of the lung, the remoteness of parts of it from the surface of the body, and the overlying and underlying structures, the accurate diagnosis of lung disease during life is fraught with much difficulty. When the physician is wholly dependent upon simple inspection, palpation, percussion, and auscultation, he often finds himself in a serious plight, since several chronic diseases present no significant abnormal physical signs in the early stages of their development. When physical signs do appear, they may be approximately the same for each of several diseases and lead to confusion in the differential diagnosis. Certain criteria employed, such as location of lesion and relative incidence of various diseases, increase the guessing score but leave much to be desired.

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The early use of the microscope widened the field of inspection and made accurate diagnosis possible in some cases. However, at that time, the microscope could be used to examine only that material expectorated or aspirated through the chest wall. This was a great handicap, for many patients did not expectorate and had nothing to aspirate.

One of the greatest advances in widening our field of inspection is the bronchoscope. This instrument not only makes it possible to visualize the suspected area of the lesion when favorably located, but also to remove material from the lesion to be examined under the microscope which, of course, gives us scientific and accurate information upon which to base a final diagnosis. Recent advances made through studies of microorganisms have greatly enhanced the value of the microscope in diagnosis; as for example, the isolation, classification, etc., of molds and yeasts.

The x-ray also enlarged the field of inspection into otherwise relatively inaccessible realms. In fact, it has become our best method of detecting the location of macroscopic areas of disease in the lungs but usually leaves us dangling in mid-air with regard to etiology of the lesion disclosed. Some x-ray workers guess the etiology with considerable accuracy on the basis of the location of lesion, relative incidence of various diseases, etc. However, when one makes follow-up observations on patients who have had definite diagnoses made from x-ray shadows alone, the errors are disclosed which show that consistent, accurate, diagnostic work by this method is an impossibility in the present state of x-ray development. The contrast between the x-ray film examination and the microscopic examination of tissues of the diseased area may be likened to that of naked eye examination and microscopic examination of sputum. Certainly, the physicians are very few who would make final diagnoses from macroscopic examination of sputum. Likewise, they are few who would draw final conclusions based on x-ray shadows. Nevertheless, no physician can be said to have made a careful chest examination unless he has inspected an x-ray film of the chest as a part of that examination.

Frequently, shadows of areas of disease will appear on the film long before the disease results in symptoms or abnormal physical signs. Moreover, films made periodically after an area of disease is detected, are of great aid in determining increase or decrease in the size of the shadow. Indeed, the x-ray film is so valuable in these respects that we must vigorously defend it against those who are misleading many physi-

cians and their patients by diagnosis from x-ray films alone, and who by this unwarranted procedure, already have thrown the film into some measure of disrepute.

The crying need today is x-ray films of the chests of apparently normal persons as well as those who are ill, since these films often reveal evidence which may lead to diagnoses of conditions, such as foreign bodies, malignancies, cardiac lesions and tuberculosis. The lives of many such persons may be saved or prolonged by proper treatment before symptoms appear. The conditions just mentioned cause enough disability and death to justify periodic x-ray film examinations of every apparently healthy person in the country, regardless of age. Jackson says: "Every ailing child should have a roentgen-ray examination to exclude foreign body. The day may come when every apparently well child will be thus examined in order to discover the cases of foreign body during the symptomless interval." Hamman says: "When we consider the location of tumors of the lung, the long periods during which they may give no symptoms and their inaccessibility to our methods of examination, then we must realize that it is vain to hope that we will detect them all at an early stage. When they are recognized most of them will no longer be operable. Nevertheless, if we succeed only occasionally in making an early diagnosis our efforts will be sufficiently rewarded." Periodic x-ray films of apparently healthy persons would aid in detecting the presence of infiltration, certain of which can be identified through a complete examination as malignancies while the condition is operable.

Of a group of 20,232 apparently healthy persons for whom Barnard had x-ray films of the chest, 752 showed suggestive evidence of cardiac pathology, such as aneurysms; 548 of these persons were referred to a health center and to a cardiac clinic for complete examinations but no final reports are yet available. Of the 204 remaining persons who were asked to attend follow-up clinics, 157 actually reported; 37 were found to have no definite evidence of cardiac pathology; that is, the previous x-ray evidence was somewhat misleading. However, seven were in need of immediate hospital care and 113 required cardiac clinic care. Only eight of this group of 120 were actually under medical supervision. Thus, 112 cases of cardiac disease were discovered through the lead given by the x-ray film of the chest of apparently healthy persons and the nature of their ailment was definitely established by clinical examination.

After pointing out the great value of the x-ray film, one asks why it is not used much more extensively at the present time. There are two main reasons: first, that the public has not been adequately informed of its value; second, its cost. Much is being done at the present time to inform the public of the great value of the x-ray film so that already many apparently normal persons are requesting x-ray films of their chests. The cost of x-ray film work in the past has, in many places, been out of proportion to that of other phases of the examination. Moreover, it has been very inconsistent with the value received. However, in this paper, we have no intention of discussing the cost of x-ray film work in private practice where the majority of patients who present themselves for examination have some symptoms of disease or some other very definite reason for examination. Here we concern ourselves entirely with the poor who are ill and with apparently normal persons in schools, colleges, universities, industries, etc., who would not be examined except when such examination is conducted through survey or becomes compulsory through the authorities in charge of the institution or industry. For this kind of work, obviously, since the taxpayer or some charitable organization must shoulder the burden or in the case of normal individuals, the institution or the industry must pay, or for the normal person who is compelled to pay, the fee must be extremely small.

The usual cost of x-ray films would prohibit nearly all of this kind of work. In fact, it was this cost which for a long time, stood in our way in finding unsuspected cases of tuberculosis among apparently healthy persons. Obviously, the x-ray film cost must be reduced to about the same basis as ordinary laboratory work so that it can be figured in as a part of a general examination without materially increasing its cost. The increased demand for x-ray studies more than compensates for the reduced charge for such service.

Periodic films of the chests of apparently healthy persons for the purpose of identifying unrecognized cases are absolutely essential to the rapid control of tuberculosis in this country. In 1931, one of us made a plea for the wide use of the x-ray film in the detection and management of tuberculous patients. The thought was that either the cost of x-ray films would be reduced or that funds would be made available whereby films could be used very extensively at the prevailing cost. The films then on the market were entirely satisfactory and there was no thought of a dif-

ferent type of film coming into use. However, one of the persons present conceived the idea of discussing with his neighbor, a successful photo-engraver, the possibility of producing a film at a very low cost. The person who made the suggestion regarding an inexpensixe film was the president of a great tuberculosis organization which had under consideration annual x-ray examinations of 10,000 children. The cost, at that time, would make it necessary either to greatly reduce the number of x-ray films or to completely eliminate them from the examinations. With the value of the film being so well recognized and without sufficient funds available, there was nothing left for this president to do except to seek a film that would be satisfactory at a very much lower cost. The result was the development of the paper film, which consists of a good grade of paper with a sensitized emulsion applied to one side.

The former method of making x-ray exposures, while satisfactory for private office work, was entirely too slow when examinations for tuberculosis were to be undertaken on a wholesale basis; that is, when thousands of persons were to have x-ray films made in the course of a few days. This resulted in the idea of preparing paper film in rolls and exposing a hundred pictures on a roll. Of course, this definitely reduced the time necessary to handle films.

The next step was to develop x-ray equipment capable of making these exposures in a rapid manner. The result was a machine that will, with ease, expose two films per minute, and under pressure of time may for short periods reach four each minute, making it possible when two technicians are at work, to make six hundred exposures during a single working day, or with three technicians, nine hundred exposures. The exposed rolls of film were then developed in the same manner as the small kodak film roll, insuring uniformity of development. When the film was dry, it was again rolled and placed on a special viewing device which unrolled it automatically, giving ample time for the proper interpretation of each exposure. Thus, the tremendous amount of time necessary for the cutting of film, introducing and removing from cassettes, individual developing and individual handling in interpretation, was saved, which greatly added to the speed with which x-ray work could be done and interpretations made. Moreover, markings, measurements, notes, etc., are easily made on the paper film.

Inasmuch as not everyone could immediately become equipped with rapid x-ray equipment and facilities for developing large rolls and for interpreting them, it was decided to also market paper films cut in the usual size which, of course, added somewhat to their cost. However, these cut films may be used in any standard x-ray equipment. Moreover, they may be made stereoscopically. When bought in this form, the cost is approximately one-half of that of celluloid films. This was not the first attempt to use paper x-ray films since they had been introduced many years ago and had been revived on several occasions. However, until this time, none had been found entirely satisfactory.

Because of the rapidity with which paper films in rolls can be exposed, developed and interpreted, their appearance on the market constituted "news," therefore, in the columns of newspapers throughout the country, numerous articles appeared concerning them. Some of these articles stated that the cost was only seventy-five cents (75c) per picture. This led to much antagonism on the part of roentgenologists in private practice. They objected to information reaching the public to the effect that an x-ray film does not cost any more than seventy-five cents (75c), and ignored the fact that this is not the complete cost of an x-ray examination. Therefore, a rather bitter attack was launched against the paper film and the producers were accused of commercialism. The quality of the film was also attacked and those who were loudest in their criticism often were persons who had never seen a paper film. Even physicians who were using them and had spoken favorably concerning them were attacked on the erroneous ground that they had financial interests or were stockholders in the company producing these films. These and other unwarranted criticisms were quickly disseminated among physicians.

One of us observed the film by actually visiting the plant on several occasions. It is true that those first produced were not of the highest quality but the research work of expert emulsionists has eventually resulted in a film entirely adequate for ordinary chest work. Even then we waited for the results of observations made by clinicians expert in chest diseases. Such observations were reported on sufficiently large numbers of cases by workers such as J. Burns Amberson, Jr., Barnard, Loew, Edwards, and Rice, to convince us of the value of the new paper film. For example, Amberson, Barnard, and Loew, made exposures on both celluloid films and paper films of 1,000 chests and after comparing them, arrived at the following conclusion: "Paper films used by us do not produce chest roentgenograms of



FIGURE 1—A. P.

Made from a paper x-ray film taken on July 16, 1934, of the chest of a child of four years. Shows first infection type of tuberculosis in the pneumonic or inflammatory stage in the left lung. Technic: 100 Ma, 50 inches distance, 80 K. V. P., 1/10 sec.



FIGURE 2—D. S.

Made from a paper x-ray film taken on February 9, 1934, of the chest of a girl of eight years. Shows first infection type of tuberculosis in the pneumonic or inflammatory stage in the base of the right lung. Technic: 100 Ma, 50 inches distance, 75 K. V. P., 1/10 sec.

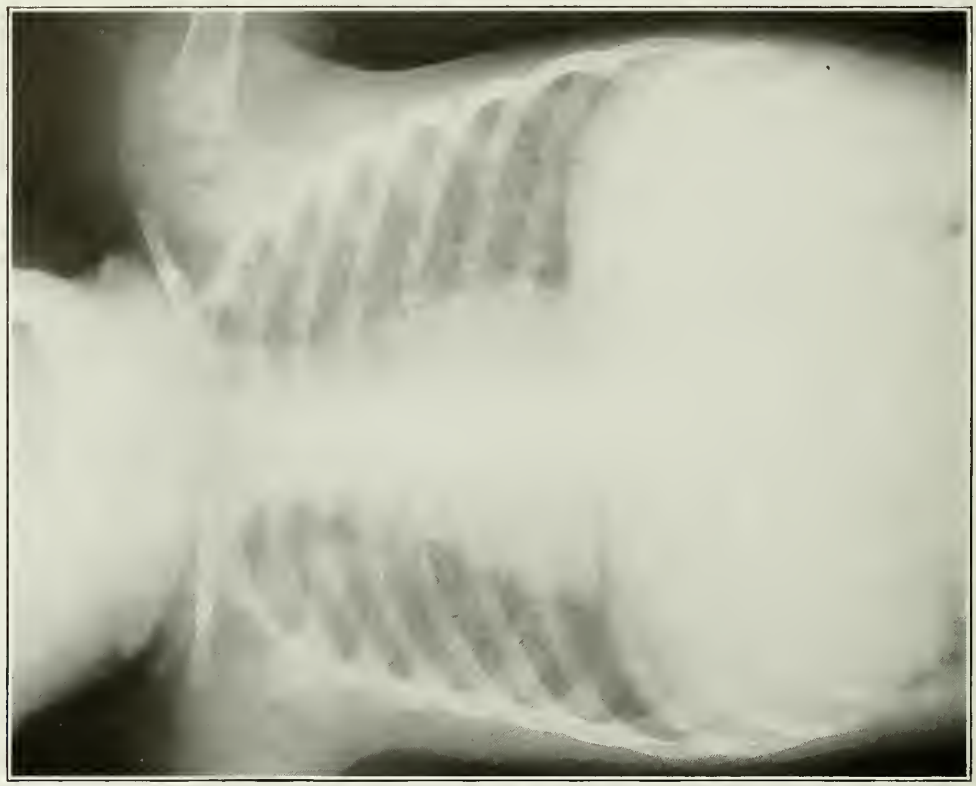


FIGURE 4—T. F.

Made from a paper x-ray film taken on June 4, 1934, of the chest of an infant of one year. Shows first infection type tuberculosis in the pneumonic or inflammatory stage in the upper lobe of the right lung. Miliary tuberculosis throughout both lungs. Technic: 100 Ma, 36 inches distance. 65 K. V. P., 1/10 sec.

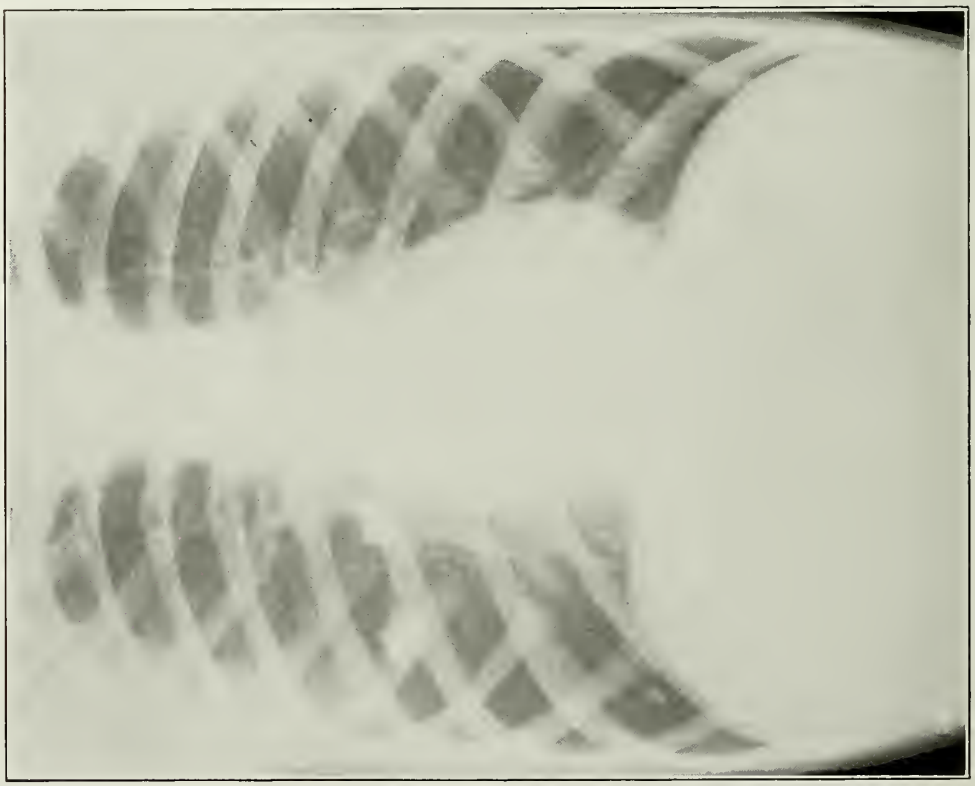


FIGURE 3—M. M.

Made from a paper x-ray film taken on September 6, 1934, of the chest of a girl of nine years. Shows evidence of Ghon tubercle formation in the right lung with calcium deposits in the right hilum region. Technic: 100 Ma, 50 inches distance. 75 K. V. P., 1/10 sec.



FIGURE 5—H. F.

Made from a paper x-ray film taken on July 2, 1934, of the chest of a girl of 17 years. Tuberculin test positive but the film shows no evidence of disease. Technic: 100 Ma, 50 inches distance, 75 K. V. P., 1/10 sec.



FIGURE 6—H. F.

Made from a paper x-ray film taken on January 7, 1935, of the same chest as seen in Figure 5. The reinfection type of pulmonary tuberculosis is beginning to make its appearance in the left second interspace. Technic: 100 Ma, 50 inches distance, 75 K. V. P., 1/10 sec.



FIGURE 7—E. B.

Made from a paper x-ray film taken on April 3, 1934, of the chest of a girl of 18 years. Shows right lung partially collapsed by artificial pneumothorax. Note outline of lobes with selective collapse of the diseased area. Also note large calcium deposit on the left side adjacent to the mediastinal shadows. Technic: 100 Ma, 50 inches distance, 80 K. V. P., 1/10 sec.



FIGURE 8—S. M.

Made from a paper x-ray film taken on August 27, 1934, of the chest of a girl of 18 years. The left lung is partially collapsed by artificial pneumothorax. Note evidence of the reinfection type of disease in the right first and second interspaces. Technic: 100 Ma, 50 inches distance, 80 K. V. P., 1/10 sec.



FIGURE 9—J. J.

Made from a paper x-ray film taken on August 29, 1934, of the chest of a girl of 28 years, after iodized oil had been introduced into the bronchial tree. Note the definite evidence of bronchiectasis, particularly on the right side. Technic: 100 Ma, 50 inches distance, 80 K. V. P., 2/10 sec.



FIGURE 10—G. P.

Made from a paper x-ray film taken on February 8, 1934, of the chest of a girl of 12 years. Shows change in cardiac outline resulting from double mitral lesion. Technic: 100 Ma, 72 inches distance, 80 K. V. P., 2/10 sec.

quite the same clearness as do celluloid films. The difference, however, is not sufficient greatly to impair the value of the paper film for practical diagnostic purposes. In the interest of public health, the slight diagnostic error would be much more than offset by the possibility of examining larger groups of people by this method. In view of the smaller expense, we therefore, believe that the paper film may be advantageously used for chest roentgenograms of large groups of school children or other persons, provided those with doubtful shadows are again x-rayed with a celluloid film. The paper film may also be found useful for other purposes by some workers according to their peculiar needs."

Later, Edwards studied paper films made of the chests of 6,393 individuals and stated that the films were of remarkable uniformity and equal in quality to celluloid. Barnard reported the results of a study of 20,000 chest examinations by the use of the paper film. The finding of evidence of unsuspected lung and cardiac lesions was truly remarkable. Therefore, we have been in a position to recommend it strongly for work among the poor and among apparently normal individuals who, except for the low cost, would not have films of the chest made.

Dr. Kendall Emerson, Managing Director of the National Tuberculosis Association, says: "Any means whereby this cost in time and material can be lessened marks an epoch in the fight to bring tuberculosis under control. Such a means is provided in the recently improved paper x-ray film which can now be used with accuracy in diagnosis and which is especially valuable for taking a large number of pictures in a short period of time, as for example, in the examination of all the pupils in a school."

Dr. H. D. Lees says: "Due to a restricted budget for the present school year, we were faced with the problem of x-raying approximately 1,075 students with an appropriation of $1,300.00 available for the purpose. Naturally, stereoscopic films, as we had formerly used, were out of the question. Moreover, our funds were insufficient to permit the use of a single celluloid film at a cost of $1.50 per student, although this is a very reasonable figure for such a service. The paper film and x-ray survey service recently developed offered the only solution to our problem, since it provided the only means by which we could continue our x-ray work and still keep the cost within the limits of our budget appropriation. Several months before our annual survey was to be conducted, the Powers company x-rayed fifty students of my selection who presented various types of chest pathology. In all of these cases we had recent stereoscopic films so that we knew exactly the type and extent of the various lesions. Although quite a number of the students making up this test group presented extremely minimal lesions, the paper film did not fail to reveal the essential detail in a single case. There was no difficulty in arriving at an accurate diagnosis after viewing the evidence presented on the single film.

"We therefore made use of this service last fall in x-raying all of our medical students as well as all members of the freshman class who were positive to tuberculin. The x-ray equipment was set up on the main gymnasium floor so as to provide ample space and to eliminate crowding and confusion. Students were given appointments at the rate of ten every five minutes and 1,086 students were x-rayed in eleven hours. The total cost for the entire group was $814.50. As a result of this survey there were detected nine cases of pulmonary tuberculosis, an incidence of .83 cases per hundred students examined. Latent childhood tuberculosis, as evidenced by calcified nodules in the lung parenchyma or calcification of the tracheo-bronchial lymph nodes, was present in 10.4 per cent of cases. Other pathologic conditions such as cardiac, bronchiectasis, pleurisy, etc., were, of course, revealed in a number of students. In all instances where the single film showed a tuberculous process, the student was at once re-rayed using stereoscopic films. This procedure was also followed in the case of all suspects as well as in those cases where there seemed to be any question as to whether or not the single film was entirely negative. In this way permanent stereoscopic films are available as a matter of record and for comparison with later serial films."

In this country, such workers as Reid, Fellows and Diehl as well as several German authors, on the basis of wide experience, are firmly convinced that fluoroscopic examination of the chest is adequate in screening out fully 95 per cent of the cases of pulmonary tuberculosis, whether symptoms are present or absent. On their recommendation, there is a rather strong tendency, at the present time, to revive the use of the fluoroscope in the detection of cases of clinical tuberculosis. These workers are cognizant of the greater efficacy of the film, that is, it will detect 5 per cent more cases, but because of lack of sufficient funds they are of the opinion that it is better to examine let us say, 25,000 persons with the amount of money available and find 95 per cent

of the cases with the fluoroscope than to use the same amount of money to examine only a thousand persons with the x-ray film and leave the remaining 24,000 unexamined. While we agree that there are many cases of unsuspected tuberculosis whose lesions can be demonstrated by the fluoroscope, we are convinced that with the reduced cost it is better to make an x-ray film examination of each chest, not only because it reveals more evidence but because it leaves a record of presence or absence of shadow which can be used in comparison with films made subsequently. When the x-ray film is not available, the fluoroscope serves a very useful but less accurate substitute.

In the use of paper x-ray films, as with celluloid, it is extremely important that the proper technic be employed. Obviously, under-exposures, over-exposures, rotation, etc., can render either kind of film of no value. The differences in technic between the paper film and the celluloid film are worthy of description and are as follows:

Technic for paper film must be worked out slowly and carefully. Most manufacturers of paper film state that the same, or very nearly the same, technic can be used for paper as is used for celluloid film. We have not found this to be entirely true. Perhaps that is the reason why so many technicians have not given paper films a fair trial, and have voiced much unjust criticism. Before a satisfactory technic was worked out for the paper film, we made examinations of each patient on celluloid and on a paper film, using the same exposure technic in each instance. When celluloid film was compared with the paper film, we found the paper to be lighter than the celluloid. After trying to vary the time, distance, and voltage, voltage was chosen as the variable factor necessary for uniform results. It was found that the paper requires a slightly heavier exposure than does the celluloid film.

Powers paper film has a high quality emulsion and is extremely sensitive, therefore, great care must be exercised in handling to prevent fogging, staining, and static marks.

All cracks in the dark room must be plugged so there are no light leaks. It is best to use a dark ruby light. If other lights are used, they are apt to fog the film. Even though the one light mentioned above is used, it is best to keep the films that are on hangers, in the shade of the light. This is just an added precaution to prevent fogging.

The next thing of great importance is clean developing tanks. Never put fresh solutions into the tanks without giving them a very thorough scrubbing with a brush and plenty of hot water. If this is not done, dark brown stains are apt to appear on the paper film.

Static marks are caused by carelessness. Never drop exposed films into the bin, but put them in by holding onto the film already in the bin so that the one going in does not rub on the emulsion on the others. If the cassette holding the exposed film is handled roughly, such as dropping it onto the work bench, numerous static marks will result. It is not necessary to buy a special hanger for paper films. By loosening the tension just a little, the regular hangers are satisfactory. In order to prevent tearing, be sure that the film does not sag on the hanger.

The developing of paper films is comparatively simple. It does not differ a great deal from that of the celluloid. If Powers paper film is used, it is advisable that Powers developer and fixer be used also, since they are much faster and give much better contrast and detail than do other brands. Develop for three minutes at 68° F. Fixing for ten minutes is enough. Wash paper film just as you would any celluloid film; that is, fifteen minutes in running water.

Paper film dries much faster than does celluloid. By hanging the paper film on a drying rack and turning a fan on them, they will dry in fifteen to twenty minutes. If warm air is also applied, the films will dry even faster. If the films are removed from the hanger before thoroughly dry and laid one or several in a press for an hour or two, they will be flat. The film will not curl if kept away from direct heat.

When using paper film it is necessary to use only one screen. In this way, one pair of screens takes care of two cassettes. The screen is placed on the back or the cover of the cassette. Load all films with the emulsion side up or to the back screen. In loading the film this way, the resulting radiograph has the same position as though one were facing the patient. This is the way most roentgenologists prefer to read a radiograph. Be sure that the felt on the front of the cassette is of superior quality so that it does not shed lint onto the back screen. This is of utmost importance as any lint, dust, or dirty finger prints on the screen show up very distinctly on a paper film.

At Lymanhurst, we are using a Kelly Koett machine, timers, and cassettes, Solus screens and an Aristochrome line focus tube. All chests are taken at 48 inch distance, 100 milliamperes, 1/10 second, voltage as a variable factor, and angle the tube five degrees to the feet.

If we had a patient who weighed ninety-eight

pounds, was twelve years old, and who had a chest thickness of six and one-half inches, we would use the following technic: 48 inch distance, 100 milliamperes, 1/10 second, 80 kilovolts peak, and angle the tube five degrees to the feet.

If this same patient was taken on a celluloid film, the voltage would be lowered so that this technic would be used: 48 inch distance, 100 milliamperes, 1/10 second, 74 kilo-volts, angle the tube five degrees to the feet.

If chest thickness is used to determine the voltage, increase or decrease the voltage three K. V. P. for each half inch above or below seven inches using 83 K. V. P. for a seven inch chest.

It is helpful to use time as the variable factor and we have used it in some cases when taking radiographs of fleshy adults.

A good radiograph is said to contain the minimum of distortion, the maximum of detail without evidence of movement, sufficient contrast to make that detail plainly visible and that degree of density which will in no way interfere with the maximum of contrast. The resulting radiograph taken on a paper film can have these qualities if the technician is willing to take the time to work out a special technic.

We have been greatly pleased with paper films at the Lymanhurst Health Center, both in the examination of the chests of children and adults. It is true that we have overlooked small shadows on these films but in no greater frequency than we formerly overlooked them on celluloid films. It is gratifying to know that when we go back to the film, we find the shadow was present and the error was due entirely to the interpreter. In our experience, shadows that are so slight as to raise only a question as to their existence, whether on celluloid or paper film, have almost never proved of significance, and celluloid films do not clear the situation any more than the paper films.

In detecting lesions of the first infection type in the chests of children or adults, we have found the paper film entirely adequate and on a par with transparent films. When these lesions are in the inflammatory stage, we know that they have existed on the average of five months as evidenced by the appearance of a positive tuberculin reaction before they have become large enough to be visualized on an x-ray film of any kind.

When the shadow of the lesion is large enough to be visualized, it is readily detected with equal accuracy on either celluloid or paper film. Such lesions are illustrated in Figures 1 and 2. These shadows are not diagnostic on either paper or celluloid film. They may be due to such conditions as pneumonia, abscess, blastomycosis, and actinomycosis. The x-ray only shows in part the location of the disease but does not disclose its etiology. Final diagnosis is made by history, symptoms, physical examination, blood pictures, sputum examinations, tuberculin test, duration and course of lesion, et cetera, aided by serial x-ray studies.

When the shadow is due to the first infection type of tuberculosis, there often is a known history of exposure. Symptoms and physical signs are slight or absent; the blood picture is essentially normal; there usually is no expectoration but stomach washings may reveal tubercle bacilli; the tuberculin test is nearly always positive; the lesion persists almost unchanged for months and sometimes for more than a year, after which it resolves and at some subsequent time calcium deposits or fibrosis may appear.

We have observed large numbers of cases throughout the entire course of the disease and have always found it a very benign condition, but it leaves serious potentialities. In one group of more than 150 such cases observed through a period of years, not one child was ill. However, one died later, of tuberculous meningitis, after the pulmonary lesion and those in the regional lymph nodes were well calcified. This type of lesion may appear any time in life when the body is first attacked by tubercle bacilli. At one time, it was believed to occur only in infancy and early childhood; now we know that it often occurs during and after the period of adolescence.

Shadows of calcium deposits, Figure 3, seen in the lung parenchyma and hilum region in childhood and early adult life, usually represent the remnant of first infection type of tuberculosis. They are easily detected with both paper and celluloid films when they are sufficiently large and so located as to cast shadows which can be visualized on the film. They should never be referred to as "healed" lesions, since this is a term allowable only to the pathologist, after microscopic examinations. Many of these lesions, of which the calcification visualized is only a part of those actually present, contain virulent bacilli capable of producing serious disease if they escape to adjacent or other parts of the body. A fact of great significance is that persons with such calcium deposits and positive tuberculin reactions develop clinical tuberculosis with much greater frequency than others who have not experienced an antecedent. Therefore, it is important to detect them by x-ray film examination since this is the only method we have of locating them during life. But, we must constantly keep in mind that

even this procedure detects only the larger ones and fails to disclose more lesions than it records.

In acute forms of reinfection type of tuberculosis, such as pneumonia, miliary disease, Figure 4, and pleural effusion, the paper film is very satisfactory in revealing the location of the lesions.

When one keeps under close observation, a sufficiently large group of persons who react positively to the tuberculin test and who have no pulmonary lesions which cast visible shadows on the x-ray film, sooner or later some of them will develop reinfection type of pulmonary tuberculous lesions sufficiently large so that they will be detected by the film. Lesions of this type rarely appear in the lungs of children before the period of adolescence. Doubtless, they are present a long time before an x-ray film of any kind will reveal them. But after they are sufficiently large to be located by the film, there is an average of two or three years during which no symptoms or abnormal physical signs are present. If left untreated, it requires an average interval of about five years from the time they can first be located by the x-ray film until death occurs. During this interval, after they can be located by x-ray film and before they cause symptoms, they are very easily treated; therefore, periodic x-ray films of the chests of all positive tuberculin reactors, beginning about the period of adolescence, is absolutely essential. Since using paper films, we have detected these lesions with the same frequency and in the same stage of development as when we used celluloid films. A typical case is illustrated in Figures 5 and 6.

In artificial pneumothorax work, the paper film serves an excellent purpose. Its very small cost enables one to make films frequently and, thus, keep a record of the extent of collapse. Moreover, it brings to light, as does the celluloid film, shadows of other lesions and conditions when they exist, such as pleural adhesions, effusion, calcium deposits, and reinfection type of lesions in the contralateral lung. Figures 7 and 8 illustrate some such findings in the chests of patients on artificial pneumothorax.

The paper film lends itself well to iodized oil work. When one wishes to outline the bronchial tree to determine the presence or absence of bronchiectasis, obstruction, etc., iodized oil is introduced into the glottis and allowed to gravitate to the part of the tree to be studied. The oil is opaque to the x-ray and thus casts shadows on the films indicating the size and shape of the tubes it occupies. Figure 9 illustrates the location of bronchiectasis in the right lower lobe revealed distinctly in this manner by paper film.

Cardiac outlines are shown on paper film, Figure 10. Thus, the measurements are easily made and indicated on the paper. In his cardiac work, Dr. Shapiro of the Lymanhurst Health Center, uses the paper film very extensively.

To aid in putting an end to 700,000 illnesses and 70,000 annual deaths from tuberculosis at the earliest possible moment, to assist in finding malignancies while still operable, cardiac disease and foreign bodies before they cause serious illness, x-ray examinations must become universal. X-ray paper offers a feasible method for the accomplishment of this goal. Beyond this point, we have no interest in the paper film. One of us devotes a tremendous amount of time to finding and treating tuberculosis among the poor with no financial remuneration whatsoever from any source. To accept donations, gifts, profits, etc., from manufacturers or distributors is far beneath the dignity of such work. Therefore, whatever has been said in this article in favor of the paper film is merited by the film on the basis of our actual experience with it and is prompted by a desire to facilitate the control of serious diseases on a scale otherwise unobtainable. Whenever anyone produces an equally good film at a lower cost or a better film at the same cost, we stand ready to accept it and recommend it, regardless of whom the producer may be or whether it be on paper or celluloid.

As enthusiastic as we are about the use of routine x-ray films, we desire to repeat the fact that *we do not make final diagnoses from x-ray shadows, either on paper or celluloid film.* An attempt to do so would be to practice very unscientific and inaccurate medicine. The best that can safely be done from shadows alone, is to speak of possibilities and probabilities and these are based often more upon location of lesion than upon any characteristics in the shadows themselves. We may say that tuberculosis tends to produce pulmonary cavities but we must not forget that this is true of other conditions. We may say that there is often a preponderance of fibrous tissue evidenced in chronic tuberculous lesions. This is also true of some other conditions. If we place side by side, films made from chests of proved cases of pneumonia, tuberculosis, abscess, actinomycosis, and blastomycosis, from the films alone, it is impossible to differentiate between them in many instances. This is why the roentgenologist frequently interprets pneumonia as tuberculosis, cancer as tuberculosis, tuberculosis as Hodgkin's disease, etc. These errors are not

to be blamed to the film but to the individual who believes the film capable of more than it is.

Therefore, in arriving at final diagnoses of diseases of the chest, we must constantly keep in mind that no single phase of the examination is adequate. While the x-ray is of great value in locating lesions, it remains just one part of an examination of which there are many important parts. The final diagnosis in any case is reached only when one has brought together *all* available evidence so that the clinical picture of the disease is complete.

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"TUBERCULOSIS ABSTRACTS"

Is the title of a small bulletin published each month by the National Tuberculosis Association. It is of great service to physicians, inasmuch as it presents abstracts of many leading current articles each year. The following is the entire content of Tuberculosis Abstracts for April:

Pneumothorax treatment, somewhat slowly adopted by the American medical profession, has now established itself as one of the most important weapons in the fight against tuberculosis. For some years there has been felt a need for more precise data so that pneumothorax therapy might be fairly evaluated. A Committee on Artificial Pneumothorax of the American Sanatorium Association, after four years work, completed a survey of pneumothorax in representative American tuberculosis sanatoria covering the period 1915-1930. Such subjects as the methods of collapse, the termination of pneumothorax therapy, the results derived from it and others were investigated through the questionnaire method and statistical analysis. The Committee published its report recently in the American Review of Tuberculosis. It is possible here to offer only brief extracts of the study and the more important conclusions.

Results of Pneumothorax

Of fifty sanatoria which volunteered to collaborate, twenty-four furnished data on pneumothorax sufficiently complete and suitable for study and tabulation. The study divided itself into two parts, the first was designed to ascertain in what proportion of patients pneumothorax therapy had been attempted, the proportion of "operative failures" and other related information, while the second part consisted of detailed case records, the total number of which submitted was not so large, probably because of the exacting criteria required.

To obtain comparable data it was necessary to define a number of terms. *Intentional* termination of pneumothorax was assumed when refills had been allowed to relapse. Termination was considered *unintentional* when obliterative adhesions had encroached on the pleural cavity. The term *pneumothorax treatment* required that there must be a demonstrable pleural sac and the patient must have received at least 100 c.c. of air or gas at regular intervals over a period of at least three months.

Very important, not only for this study but for consideration of pneumothorax in general, was the effort of the Committee to define precisely what is meant by *effective collapse*. Keeping in mind clinical, roentgenographic and laboratory criteria, the Committee decided that the following three conditions should be met, or at least two of them, when the third was doubtful or not stated:

1. Disappearance of symptoms.
2. Disappearance of bacillary sputum.
3. Demonstrable closure of cavities, especially roentgenographically.

The incidence of pneumothorax reported by the sanatoria varied from one per cent to 34 per cent with an average of approximately 10 per cent. Twice as many females as males received pneumothorax treatment and by far the largest number was between the ages of 20 and 35—an age distribution corresponding to the age-period of greatest frequency of pulmonary tuberculosis.

Approximately 40 per cent of the cases, which received pneumothorax treatment, showed considerable cavitation, that is, destruction involving the collapsed or "treated" lung, and 25 per cent moderate cavitation, making a total of about two-thirds having more or less marked pulmonary destruction prior to beginning pneumothorax therapy.

The contralateral lung appears to have been essentially uninvolved in about one-third of the cases studied; slight lesions were recorded in a little over one-third; and moderate ones in a smaller group. Very few cases with contralateral cavitation were recorded.

Effective collapse was obtained or maintained in 38 per cent of the cases. In nearly two-thirds of the series it was necessary to discontinue treatment prematurely, most frequently because of the development of pleural complications. Two factors, small proportion of cases susceptible to effective collapse, and forced and premature discontinuance of collapse, appear to limit most seriously the success of pneumothorax therapy.

Effectiveness of collapse of the diseased areas is the greatest single factor in obtaining successful results, whether immediate or more remote. It seems obvious that valuable time is often lost in continuing over a long period a poor pneumothorax when other and more promising measures are available, or when the patient is obviously deriving no benefit from the procedure.

The data furnished no substantial support for the common impression that patients under twenty years of age respond poorly to collapse therapy. In fact, measured by immediate results and effectiveness of collapse those under thirty-five fare better than those over that age. Wider use of pneumothorax in the group under twenty seems indicated.

The later results, in general, assessed one to fifteen years after termination of pneumothorax treatment, appear distinctly gratifying. Although a considerable number of patients could not be traced, over 70 per cent of those followed were still living and of these three-quarters were able to work. Thus, with due consideration of its very considerable limitations, artificial pneumothorax appears to be undeniably one of our most valuable therapeutic measures in the treatment of pulmonary tuberculosis. We may further add that from this study its discontinuance seems warranted in many cases after a reasonably adequate period of effective treatment, which cannot be too dogmatically predicted.

April first is the opening date for the educational campaign of tuberculosis associations. This year emphasis will be placed on treatment—the importance of early diagnosis in order that treatment may be begun promptly, modern methods of treatment such as collapse therapy, the need of sanatoria and social rehabilitation of the tuberculous patient. The poster is designed to suggest that medical science is a moving, living enterprise in step with the times. Attractive booklets are ready for distribution. Newspaper publicity, radio talks and public meetings will help to impress the public with the need of obtaining scientific medical service. The co-operation of all physicians in this enterprise is keenly desired by all tuberculosis associations.

A Survey of Artificial Pneumothorax in Representative American Tuberculosis Sanatoria, 1915-1930, Peters, Pope, Morriss, Packard and Miller, Am. Rev. of Tuber., January, 1935.

BOOK NOTICE

A REMARKABLY COMPETENT PIECE OF WORK

Tuberculosis of the Lymphatic System, by RICHARD H. MILLER, M.D.; first edition, cloth, 248 pages; New York: The Macmillan Company; 1934. Price, $4.00.

Scrofula, which is so old that men once thought it could be cured by the touch of a reigning sovereign, is considered in its modern conception (tuberculosis of the lymphatic system) by Dr. Miller in a most comprehensive sense. After a charming little historical sketch of the disease as it was understood in ancient and medieval times, he commences with the biology of the tubercle bacillus, discusses its mode of entrance into the human system, its pathogenesis; and finally treats fully each type of the following: cervical tuberculosis, hilum tuberculosis, abdominal lymphatic tuberculosis, and axillary, inguinal, atypical, and generalized lymph node tuberculosis. The book concludes with an outline for the routine care of a case. There is a good index, and a fine bibliography at the end of each chapter.

Dr. Miller, who is assistant professor of surgery in the Harvard Medical School, has produced an outstanding volume which is as practical as it is competent. It is safe to say that there is no physician, whatever his specialty, who could not draw benefit from it.

The
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TRENDS IN TUBERCULOSIS

Many physicians now living well remember the day when pest houses dotted this country. They have seen these institutions disappear. They also well remember when diphtheria and typhoid fever were very common diseases. They have seen them almost reach the point of being classified as rare diseases.

Tuberculosis likewise is a communicable disease which may be controlled just as successfully and, indeed, already is taking the same course which other communicable diseases have taken. In fact, tuberculosis among cattle has been almost completely eradicated in more than two-thirds of all the counties of the United States. It is obvious that if ten years ago, veterinarians had constructed hospitals for tuberculous cattle, their institutions would already have gone the way of the pest houses.

The mortality from tuberculosis is quite rapidly decreasing; in fact, from 1930 to 1933 there was a decrease of approximately 16 per cent throughout the nation; in other words, slightly more than five per cent each year. Along with the decrease in mortality, as one might expect, there is a definite decrease in morbidity; such a decrease, in fact, that the demand for sanatorium beds is very definitely diminishing. In the city of Detroit, where very careful observations are being made and special attempts have been under way to detect tuberculosis, the annual decrease in morbidity is from five to seven per cent. Indeed, in the last four years it has been found possible to discontinue 400 to 500 beds for tuberculous patients because of lack of demand for them and it is estimated that another 500 bed service will be closed in the next few years. In the state of Minnesota, where a few years ago there were long waiting lists for the 2,227 beds in state and county tax-supported institutions, there are now approximately one hundred vacant beds.

Much more encouraging than the decrease in mortality and morbidity is the sharp decrease in the incidence of positive tuberculin reactions among children and young adults. After all, this is what one might expect since the number of open cases of tuberculosis has decreased and dairy products are not the source of infection that they were five or ten years ago. This reduced incidence of positive reactors is most encouraging, since it is this group which provides the greater part of the clinical tuberculosis load of the future. In the Out-patient Department of the Lymanhurst School, the incidence of positive tuberculin reactors decreased 43 per cent between 1921 and 1934. Indeed, the incidence of positive tuberculin reactors has become so low among children that in the Pediatrics Out-patient Department of the Minnesota General Hospital the students of medicine may devote three weeks to the service without seeing a single child react positively to this test. Already there are sections in the country

where not more than three to four per cent of the girls and boys, including even high school age, react positively to the tuberculin test. This decrease extends into adult life, as is shown by the low percentage of positive tuberculin reactors among University students in a good many parts of the country.

Obviously, if the present decrease in tuberculosis continues, it will not be long until many of our sanatoriums must close their doors just as the pest houses did. Indeed, private sanatoriums of the first-class, such as the Agnes Memorial in Denver, and a good many others have already closed their doors, and not a few of the remaining private institutions are contemplating such action in the near future.

There can be no doubt that the organization of the National Tuberculosis Association in 1904, and subsequent activities of that organization, is in no small way responsible for the recent rapid decline in tuberculosis in this country. The sale of Christmas seals and the use of the funds in an educational way has had a powerful influence upon the control of tuberculosis. On April 1, the eighth annual Early Diagnosis Campaign, sponsored by the National Tuberculosis Association, starts throughout the nation. These campaigns have done more to stimulate the interest of the medical profession, closely allied groups, and the public in general, in tuberculosis control than any other single project of the National Tuberculosis Association in its entire history. THE JOURNAL-LANCET takes much pride each year in issuing a special number on tuberculosis in support of the Early Diagnosis Campaign.

J. A. M.

THE VETERINARIANS' METHOD OF TUBERCULOSIS CONTROL

One can not discuss tuberculosis control at length without referring frequently to the fine accomplishments of the veterinarians. They and closely allied groups have taught us how easy it is to control tuberculosis among animals when one starts from the beginning. In their work, a clear vision of tuberculosis control led them to the beginning of the disease; that is, when an animal reacted positively, no matter how healthy in appearance, it was considered a potential reservoir of tubercle bacilli. They knew that not all such animals would fall ill from tuberculosis or become disseminators of bacilli. They also knew that some would fall ill. Inasmuch as they had no test or phase of examination to determine which tuberculin positive animals would later become spreaders of tuberculosis, they slaughtered all, with the result that they have made the greatest demonstration of tuberculosis control that the world has ever seen. Already eighteen entire states and two-thirds of all the counties of the entire country are accredited. In human medicine we can use the same tuberculin test in finding clinical cases of tuberculosis, as well as potential cases. Fortunately, our methods of treatment have advanced almost as fast as those of diagnosis, therefore, where the veterinarian slaughters we have three methods of dealing with tuberculous human beings which are just as effective: The first is isolation of those who cannot be treated successfully or whose sputa cannot be rendered negative to tubercle bacilli. To take such patients out of a community or to isolate them in their homes is just as effective, so far as tuberculosis control is concerned, as the slaughter of tuberculous animals. Second, large numbers of cases are now treated, particularly by collapse therapy so that their lesions no longer eliminate tubercle bacilli which reach the bodies of others. This is also as effective as slaughter in the cattle family. Third, in the human family, we can resort to teaching of the contagious nature of tuberculosis so that the potential case may be kept under close observation through periodic examinations for the appearance of the clinical type of disease.

J. A. M.

RECENT INTEREST OF MEDICAL PROFESSION IN TUBERCULOSIS

The criticism has often been made that work in tuberculosis has become very highly specialized and is in the hands of only a relatively small group of physicians. This criticism is more or less justified. However, a widespread interest in tuberculosis is being developed among the physicians throughout the country. Ten years ago when a tuberculosis program was to be presented before a medical society, the attendance was very small. Today such a program attracts large numbers of physicians.

Probably the increased interest is due to the fact that our methods of diagnosis have become so standardized that any physician who is interested and has adequate equipment, can arrive at an accurate diagnosis in the majority of cases in a brief period of time, and because our methods of treatment have also become standardized, and can be carried through to a successful outcome provided the disease is detected before it has caused too much destruction. There is nothing mysterious about the treatment that cannot be carried out successfully by any physician who is willing to take the time to become informed on

modern procedures. Moreover, physicians everywhere can now see that the program of tuberculosis control is succeeding and that if it is continued in an intense way in every community, tuberculosis can very quickly be reduced from its present major position to one of minor importance. In short, it is just a communicable disease that can be controlled by methods very similar to those which have been so successful in the control of other communicable diseases, such as diphtheria and typhoid fever.

Thus, medical associations and societies everywhere have appointed or are appointing special tuberculosis committees, who are making investigations of the tuberculosis activities in their communities and are recommending that the members of their profession take an active part not only in developing programs but also in carrying out the actual work that is necessary. They are recommending that each physician, regardless of the nature of his practice, make the tuberculin test a routine part of every examination and that X-ray film examinations be made of the chests of all who react positively to the test. They are cognizant of the fact that clinical tuberculosis is not diagnosed through the tuberculin test and the X-ray film alone, but that these procedures often provide evidence which lead to most careful clinical and laboratory examinations which are adequate to make final diagnoses. Our goal is to have diagnostic centers established in the offices of at least 100,000 physicians throughout the country.

The fact is well established that chronic, pulmonary tuberculosis usually exists one or more years before it causes symptoms or abnormal physical signs. It is also well known that when symptoms appear, approximately 80 per cent of the patients have the disease in a moderate or far-advanced stage and are spreading their tubercle bacilli to their associates. Therefore, as physicians we must be on the lookout for tuberculosis in the bodies of all the members of our clientele and their families before symptoms appear. This is the time when most can be done for the patient and the community. The old method of waiting until patients request examinations because of symptoms was a failure in the majority of cases. The few physicans limiting their work to tuberculosis and chest diseases, whether they be in institutions or in private practice, can never solve the tuberculosis problem unaided, neither can a few free clinics and the small number of sanatoriums available solve the problem. When physicians everywhere seek tuberculosis and have a keen interest in its treatment and prevention, and provisions are made in more general hospitals for its diagnosis and treatment, the disease will be rapidly controlled. Where one physician was interested in tuberculosis, ten years ago, many are now interested. This is the most encouraging fact in the field of tuberculosis. J. A. M.

SOCIETIES

SURGEONS AND HOSPITAL EXECUTIVES OF NORTHWEST CONVENE IN ST. PAUL

St. Paul's alert group of surgeons are receiving congratulations these days on the successful fruitage of their efforts in arranging and conducting the recent sectional meeting of the American College of Surgeons. More than 400 fellows from throughout Minnesota, North and South Dakota, Wisconsin and Manitoba registered for the three-day session, which concluded March 17. Actual attendance was considerably in excess of this figure as many who came for a session or particular clinic did not visit registration headquarters at the Hotel Lowry.

Public interest and participation as measured by the attendance at the concluding community health meeting on Sunday afternoon, was so great that the theater of the municipal auditorium proved entirely inadequate and an overflow meeting was arranged in another hall. In spite of this, many were turned away. The speakers repeated their addresses before the second audience.

A hospital conference, devoted to administrative, professional and economic problems, and participated in by members of the medical profession, trustees and hospital executives was an outstanding feature of the meeting. Three sessions were held.

Complimenting the Minnesota officers on the outcome, the Minnesota section re-elected its officers without change, with Dr. Wallace A. Cole, St. Paul, continuing as chairman; James M. Hayes, Minneapolis, secretary, and O. J. Hagen, Moorhead, counselor.

Other executive committees elected were:

North Dakota—Dr. Murdock MacGregor, Grand Forks, chairman; Dr. John H. Moore, Grand Forks, secretary, and Dr. John E. Countryman, Grafton, counselor.

South Dakota—Dr. E. A. Pittenger, Aberdeen, chairman; Dr. F. Daniels Gillis, Mitchell, secretary, and Dr. William G. Magee, Watertown, counselor.

Wisconsin—Dr. F. Gregory McConnell, Oshkosh, chairman; Dr. William J. Carson, Milwau-

kee, secretary, and Dr. Thomas J. O'Leary, Superior, counselor.

Manitoba—Dr. B. J. Brandson, Winnipeg, chairman; Dr. George W. Fletcher, Winnipeg, secretary, and Dr. W. A. Bigelow, Brandon, counselor.

The St. Paul fellows sponsored the clinics which featured the first two days of the convention. Arranged in participation with the approved group of hospitals, these included operative and dry clinics, X-ray demonstrations and surgical pathological conferences. Facilities of Ancker hospital were made available for a fracture clinic. A demonstration of brain tumors and the making of encephalograms with interpretations of findings was featured at Mounds Park Sanitarium where a neuro-surgical clinic was held. A cancer clinic in eight sections was held at St. Joseph's hospital.

The scientific sessions were notable, with a distinguished group of visitors in attendance including, Dr. Malcolm T. MacEachern, Chicago, associate director, American College of Surgeons; Dr. George Crile, Cleveland, chairman of the board of regents of the American College of Surgeons; Dr. Frederic W. Bancroft, New York, associate professor of clinical surgery of Columbia University; Dr. Irving Abell, Louisville, professor of Clinical Surgery, University of Louisville; Dr. Alfred W. Adson, Rochester, Minn., neuro surgeon Mayo Clinic; Dr. Charles L. Scudder, consulting surgeon, Massachusetts general hospital; Dr. LeRoy Long, Oklahoma City; Dr. Frederick A. Besley, Waukegan, professor of surgery, Northwestern University; Robert Jolly, superintendent of Memorial hospital, Houston, and Dr. W. M. Newquist, Chicago, department of industrial medicine and traumatic surgery, American College of Surgeons.

In opening the hospital conference, Dr. MacEachern took occasion to sound a warning against a growing tendency, because of economic conditions, to release hospitalized patients too early in their convalescence. He also declared that the time has come when the College must insist upon the keeping of complete and adequate case records. Rather pungently, he likened hospitals without records to clocks without hands, "running, but not giving off any information." He reported continued progress in the College of Surgeons' campaign for hospital standardization, and noted that it has now reached the point that 98 per cent of the people of the United States are within 20 miles of an approved hospital.

Speaking as the representative of the small town hospital, Dr. A. F. Branton of Willmar, superintendent of Willmar hospital, proved to be an able and willing champion of those institutions. According to Dr. Branton, the hospital in the smaller center has recently found itself thrust into a new position of importance and responsibility, "due to the fact that the percentage of people who heretofore may have had the means to go to the larger centers for their care now are forced by necessity, if for no other reason, to look to the local institution in time of distress." The opportunity is thus created, Dr. Branton pointed out, to demonstrate that the small hospital can serve well in good times as well as bad.

Citing that the urban population has available hospital facilties at the ratio of five beds per 1,000 of population while the rural areas must be satisfied with two beds per 1,000 people. Dr. Branton urged that the figure 2 be brought up to 4, inasmuch as the rural population is now learning that the local hospital "is a good place to get well in."

"The rural hospital," said Dr. Branton, "should be a center of medical education where mothers feel free to run in and have the baby weighed. By the intimate contact of the hospital much good can come to the individuals, to the community health and to national problems. The superintendent and nurses should be able to present at PTA's, the 4H Club meeting, rural and community clubs and by their own social contacts, discussions pertaining to hospitalization. If the rural hospital would undertake to explain vivisection in its real light, that situation could be quickly and readily remedied. In health forums practical preventive medicine and modern hospital care could be presented in a most delightful manner. Legislation concerning hospitals could be much easier accomplished by this direct public contact. Let us make the most of our opportunity."

The principles that are guiding the Minneapolis hospitals in organizing the Minneapolis Hospital Service Association to sponsor a co-operative payment plan for purchase of hospital care were outlined by Joseph G. Norby, superintendent of Fairview hospital. Designed as a service to self-supporting persons, and involving neither charity nor profit, the proposal would provide the means whereby the individual could budget and pay the entire cost of necessary hospitalization over a period of time. Mr. Norby described the plan as simply an application of the insurance principle on a strictly mutual basis and without the profit element. It would tend to overcome the inability of the great middle class to pay for hospital care

during these times and would be an effective means of combatting the current financial crisis among hospitals.

The speaker accepted the defining phrase "group hospitalization," and estimated that at a cost of 75 cents per week or less to participants, hospital care for a period of 21 days would be provided. Members of the insured's family could participate by contributing an additional fee. The normal relationship between doctor and patient would be preserved as the patient would be permitted to make his own selection of doctor and hospital.

More than 40 cities in the United States have organizations of this type in successful operation at the present, Mr. Norby said, and it now appears that, when more generally accepted by the public, hospital rates may be materially lowered.

Proceedings of the Minneapolis Clinical Club

Regular Meeting, February 14, 1935

Vice-President, Dr. Floyd Grave, in the Chair.

MISCONCEPTIONS COMMONLY HELD CONCERNING STRABISMUS

Dr. Walter Fink

Because of the extensiveness of the subject of strabismus and the limitation of time I wish to confine my remarks to a few of the misconceptions commonly held by layman and doctor.

The layman is not entirely to blame for his misconceptions as to cross-eyes. Until recent years, the exact sequence of events which lead up to squint was not thoroughly grasped by even the average physician. Perhaps the same lack of unity on the part of medical advisers as to the best method of correcting the deformity may be responsible in part for the popular prejudice against the prescribing of glasses for young children and against operating upon the young child when such procedure is indicated.

One of the chief errors concerning these cases is the idea as to the cause. To laymen, cross-eyes are the direct result of some sudden fright, shock, strong emotion, convulsion, whooping-cough, or other disease of childhood. Hereditary influences seem to be unimportant to them, or possibly it seems only a coincidence that the mother or father, a brother or sister, was similarly afflicted in early childhood. It is but natural, therefore, that another child in the same family may become a victim following one of the causes mentioned. As a matter of fact, there is a logical sequence of events leading up to each case of squint. Most children at birth are farsighted to the same degree as the squinting child. The number of children who become cross-eyed, however, is small as compared with those whose eyes are straight. At birth the child's eyes are not perfectly co-ordinated or capable of working together. After six to eight weeks the eyes begin to work harmoniously. Both eyes will fix upon a bright object or follow mother or nurse about the room. At the end of the first year this habit of parallel vision becomes fairly well established. The eyes are straight. In order to use the two eyes together a faculty or habit, known in medical language as fusion, is awakened. Each eye sees singly but the two images become blended or fused into one.

The fact which I wish to emphasize is that the fault is not a muscular defect in most cases but rather a defect in the higher control in the brain. Perhaps a delayed maturation of the association fibers which is commonly called the fusion center is the cause. The condition can be likened to the speech area in the brain where, because of inherited tendencies, the center does not develop normally or its development is retarded by extraneous factors. In some recent work, Bryngelson and I determined that this arrested development may be closely related to shifting the handedness of the child. With this first principle in mind one can realize the folly of the excessive calesthenics practiced by many optometists with the aim of developing the muscles.

The second misconception is that glasses must always be applied and cannot be taken off later. In many cases they are not ordered and in others are given only temporarily. They serve as a crutch to relieve excessive accomodation, thus allowing the weakened fusion center to develop and also the eyes to remain parallel.

Another misconception is that the eyes will straighten spontaneously if given a little time. This is actually a rare occurrence and if it does happen, the seemingly straight eyes do not function together. The child ignores the image of the weaker eye and we have what is called suppression.

Another misconception is that the vision of the defective eye cannot be improved to normal. Some claim that it is a congenital defect. By proper training many cases obtain normal vision.

Another erroneous belief is that one should wait until the child is six years old before beginning treatment. As a matter of fact, the younger the better. I recently prescribed glasses to a year old child. The glass relieves the extra effort of accommodation and during the early years attention is given toward maintaining good vision in both eyes. Many three year old children can be started in fusion development.

A common misconception is that all that is necessary is a pair of glasses or an early operation. The glass is but the first step and the operation the last resort. In between should be months of visual and fusion development. To operate without developing the fusion sense is wrong because the fusion control keeps the eyes straight. This may be compared to a driver and a team of horses. Many cases, then, do not require an operation.

Not enough attention is given to the mental phase of the developing child. Children of four years become conscious of their deformity. This is forced upon them by taunts from other children. "Cockie," "cockeyed," etc., make the child conscious of his handicap. He gradually shuns the contacts of other children, prefers to play alone and loses the influence of comradeship which is natural to the normal child. As he grows older, the defect grows in his consciousness, and an inferiority complex develops which gathers momentum as adolescence approaches. Discriminating parents sometimes sense this change in disposition and eagerly seek the help of the physician. Others seem to fail utterly to recognize the change which develops in the child's mentality and disposition.

Many have the erroneous idea that the course of treatment should cover a few weeks and that the parents can sit by and watch the doctor work. The reverse is true. The process may extend over a period of months and years and the parents are the ones who do the work.

Finally, in neglected cases, even though the eyes may eventually be straightened by operation, the results are only cosmetic, i. e., the eyes are straight but vision in the squinting eye remains poor, fusion does not develop and the individual goes through life with one eye, so to speak. Little thought is given to the fact that such individuals are excluded from many useful occupations and vocations in life for which they are otherwise well qualified. This is an economic phase of squint which need not occur if the proper measures are taken at the right time to correct the defect.

The one case I was particularly anxious to have is a little fellow who developed squint at three years of age. His vision was practically nil, and the eye turned twenty degrees. He developed a very strong fusion due to the efforts on the part of his mother. I later took the glasses off and his eyes remained perfectly straight. I followed him for three years, and his eyes remain straight. This case is a retarded development of the higher centers. I just mention this to state that all these cases are not permanently glassed.

Case I. The patient is an example of how much vision one can develop in an amblyopic eye. Her left eye was markedly defective. Today she sees better than 6/5, and the only reason she does that is because she has one of the most co-operative mothers I have ever seen. Her mother worked on this fusion sense at home and developed it very markedly. Then I operated. It had been present too long to straighten it out without an operation. This child was operated about a year ago and she occasionally comes in to see me. She has good fusion sense and her eyes seem parallel. Also she was approaching the age where she was very sensitive where other children were concerned. Therefore we decided to go through with the operation. She has parallel eyes now.

Case II. This boy's mother has exactly the same condition as he had. I have three families in the city where one of the parents is a squinter, and where they have several children that squint. In one family they have eight children and the majority of them squint. This boy's mother has the same defect in the same eye. Today she still has the strabismus, practically a blind eye. He was operated about two years ago, going through the course of training before operation. To operate and then expect the eye to stay straight is not possible. It is better

to first train the fusion so that after you operate the eyes stay in place. This will eliminate the necessity of re-operation. He had good fusion the last time I tested him.

Case III. This case was operated about five years ago. She had a strabismus of about forty degrees. One of her eyes you could hardly see. I have not followed her recently, but the last time I tested her she had fusion. The results we got at the time seemed satisfactory. She is wearing her glasses all the time because of a high degree of hyperopia.

There is much to be learned concerning this problem and I am trying to find out just what are facts and what are not. Some day we will get some facts and information as to what cases can be treated a certain way and what cannot.

Discussion

Dr. C. W. Rucker: I think one of the most evil of the misconceptions which parents and others have about squint is that the child will outgrow it a little later. One sees and hears that too often. I believe that in this regard the pediatricians could be of a good deal of service. If, when the child has reached the age of three and is able to talk and name pictures, they would make it a part of the examination at that time to prove whether or not vision is normal, it would be a distinct help. If they are unable to prove that the vision is normal in each eye they might send the child to an oculist for his opinion.

This work Dr. Fink is doing, I think, will be quite valuable. He did not have time to mention some of the men working on it, but one is Dr. Guibor in Chicago. He has two clinics, one in the Children's Memorial Hospital where they have no funds for fusion training. The children have a refraction and are given glasses. They cover one eye to develop the other eye. At the University Hospital they have the funds they need and can all have fusion training. In the Children's Memorial Hospital where they cannot do any fusion training they cure about 50%. At the University Hospital at Northwestern they cure about 80%, adding on another 30%. That leaves only a few that should eventually come to operation when there is proper management from the beginning.

Dr. Walter Fink: The stereoscope was a grandfather when we were born. The principle exists still only in a more interesting form. The amblyoscope is nothing more than a stereoscope that moves on a hinge. You can use it while the eyes are turned. In the original stereoscope you had to insert prisms and it was a very difficult thing.

As to the time to start these exercises, fusion cannot be started much before the third or fourth year. Previous to that you put a glass on to relieve any excessive accommodation. You then blind the good eye occasionally and keep the development of the fusion in the turned eye so when the child reaches the third or fourth year if the eye is still turned one can start the fusion exercises.

CASE PRESENTATION

Multiple Zanthoma (Diabeticorum)

Dr. D. D. Turnacliff

The patient is a male, age 26, 4 ft. 6 in. in height, weighing 165 pounds, showing fat distribution and defective genitalia development of pituitary deficiency.

One year ago discreet papular lesions developed on extensor surface of arms, knees and scattered over the back. They have the characteristic color of Xanthoma. These lesions have increased in size up to 5 cm., with the last lesion appearing on the upper lip.

Blood fat and sugar determinations are as follows:

	Blood Serum	*Normals*
Total lipids	4789.6 mgm. %	570-820 mgm. %
Total fatty acids	3789.6 mgm. %	190-420 mgm. %
Total cholesterol	910.0 mgm. %	100-230 mgm. %
Cholesterol esters	600.0 mgm. %	40- 70% of total
Cholesterol (free)	310.0 mgm. %	30- 60% of total
Lecithin	875.8 mgm. %	175-330 mgm. %
Iodine absorbed	6832.0 mgm. %	
Iodine number	160.6 mgm. %	100-150
Total protein	6.58 gm. %	6.53-7.98 gm. %
Non-protein nitrogen	37.2 mgm. %	20- 36 mgm. %
Glucose Tolerance		
Fast		160
½ hour		255
1 hour		315
2 hours		237.5
2½ hours		170
Urine Specimens		
Fast Negative—		
1 hour		4x
3 hours		4x

There is about eight times normal amount of blood fats and the blood serum shown was of the consistency and color of cream. Biopsy shows the characteristic findings of Xanthoma. X-ray of pituitary area is normal.

CONSIDERATION OF SPECIAL POINTS IN DIABETES MELLITUS

Dr. A. E. Cardle

The subject of diabetes mellitus is indeed a very common one, and one on which volumes have been written. Following the discovery of insulin there was a renewed interest in the subject, for at last the general feeling prevailed that the dread of diabetes was over. However, this wave of interest has lagged, and given way to other things since the use of insulin became so universal. The insulin era is still in its infancy, and only the foundation of diabetes has been laid. Much more investigation is necessary before we shall feel that the disease is being managed adequately. Also, this disease does not stand alone, for it is influenced by, or has an influence on, almost every other disease,

thus I believe that each one in this group can be interested in the subject. My purpose in presenting the following few points this evening is to try and bring out some things in this subject of interest. These are not particularly new, and no attempt will be made to relate them one to the other.

In the first place, no discussion of today is complete without including something on the endocrine glands. The whole literature is permeated with it, and we seemingly have gone in medicine from the injection period to the gland period. It even has come into diabetes, and is really very interesting. To go back; in 1889 Von Mering and Minkowski showed that extirpation of the pancreas produced diabetes. In 1922 Banting and Best proved that diabetes could be controlled by the injection of pancreatic extracts from which, with Collip's assistance, insulin was afterwards extracted. This fact, together with the observation of lesions of the pancreas in cases of diabetes, is the foundation of the pancreatic theory of diabetes. Accordingly the theory of the disease is always due to insufficiency of endocrine function. Opie, Weichselbaum, et al, have shown that frequently pathological studies of the islets of Langerhans will show hydropic or hyaline degeneration or fibrosis. However, typical and constant lesions exclusively characteristic of diabetes never have been found, since those just mentioned may be observed in nearly one-half of the pancreases in cases in which there were no deaths. Others have attempted to show that pancreatic lesions cannot be demonstrated unless the organ is examined and studied immediately at death, since postmortem change might alter the picture. Nevertheless, typical lesions cannot be demonstrated in many cases, and extraction of the gland in fatal cases shows the presence of insulin in amounts that would assure life for several weeks. With this knowledge, Houssay undertook a series of studies to determine the influence asserted by glands other than the pancreas in diabetes. They found that the removal of the pancreas in dogs produced severe diabetes, but that this did not develop in dogs who previously had had the pituitary removed. Apparently the gland exerts a marked influence on carbohydrate metabolism, and to a lesser extent on protein and fat metabolism. This work has been confirmed by Regan and Barnes. One of the latter's dogs lived five weeks and they were able to throw the animal into convulsion with one-fourth of a unit of insulin, and relieve the convulsion by glucose. This work has also been mentioned in a current article by Evans on the pituitary gland. Unfortunately, as yet experiments on humans have not been attempted since the use of commercial extract is not possible due to the lack of pure pituitary extract. Both the posterior and the anterior portions of the gland have an effect, but Houssay believes that the anterior pituitary is the only mainly responsible.

Further than this the pancreas is influenced by the thyroid gland in diabetes. Removal of the normal thyroid gland in non-diabetic patients has no effect on the carbohydrate metabolism, but removal of normal thyroid glands in diabetics markedly improves the carbohydrate tolerance. The removal of the deranged thyroid in diabetes is, of course, well known. Thus we see that other glands of internal secretion play a considerable part in carbohydrate metabolism, and in time may influence our treatment, and lead to an increase of knowledge in our field of treatment.

In the next place I should like to make a few remarks about insulin. It, of course, still holds its honor as one of the greatest discoveries of medicine. It is not only produced by the pancreas, but also has been prepared from the submaxillary, thymus, thyroid, liver, spleen and muscle tissue. It is not reported as ever having been found in the pituitary. The former might be due to the transfer of insulin from the pancreas to other tissues, or insulin may be a constituent of every cell which metabolates carbohydrates, and the islands of Langerhans may be specially developed structures which supply active matter when the demand is too great to be met by the insulin producing power of the individual cell. However, the insulin in a depancreatized dog is not enough to ward off diabetes.

Himsworth, after a considerable amount of work, came to the conclusion that before insulin is effective it must be activated. This, he felt, was done by a substance which he called insulin-kinase, and is somewhat similar to the activation of trypsinogen by entero-kinase. This unknown substance is likely produced in the liver since it has been shown by Mann and Magath that insulin has no effect on the blood sugar six to eight hours after hepatectomy. It is also known that there is a diminution of insulin activity in association with diseases of the liver.

Another interesting feature of insulin noted is the tendency to produce allergic reactions both locally and generally. The local reactions consist of small reddened areas at the site of injection, and the general reaction may consist of generalized urticaria, nausea, vomiting, and occasional collapse. These are most unpleasant to the patient and often hard to control. Some likely have been due to the brand of insulin used, whether made

from beef or pork, but at other times this is not so, and the patient is allergic to every kind of liquid insulin. Relief here may be obtained by using crystaline insulin as reported by Allan and Scherer. At other times relief may be obtained by desensitization, starting with a minimal dose, and working up gradually. The evidence that the insulin molecule is a protein has not been absolutely established, for evidence has been presented to show that crystallin insulin is the molecule of insulin itself, but may be a crystal of protein to which the activated insulin has been absorbed. There are a number of insulin resistant cases and it may be that these are associated either with diseases of the liver or allergy.

The next point which I should like to cover is coma. Joslin makes the statement that "coma as the cause of death is uncommon today," and certainly insulin has greatly decreased death from coma. However, during the past few years it would appear as if coma as the cause of death was on the increase. Just why this should be, of course, is only a matter of speculation. It may be relative, since diabetes is on the increase, or it may be due to an increasing carelessness or lack of cooperation on the part of the patient due to the general state of affairs. One would not want to suggest that it was a laxity on the part of the profession, but that should be considered. Lande, in analyzing the vital statistics for New York City, shows that the introduction of insulin has favorably affected the diabetic mortality from coma only under the age of 35, and that in New York City death from diabetes is on the increase.

To what is death from coma due? Respiratory failure, heart failure, and at times kidney failure closely simulating uremia. This is produced by irritation of the kidney from diacetic and oxybutyric acid. By far the most important cause of death is from vasomotor collapse. In the treatment of this condition the restoration of the blood volume is equally important, and many times more so, than the use of insulin. Cases are known where the individuals have remained in a profound coma with the carbon dioxide combining power of the blood well above the critical level, where the liberal administration of fluid restored consciousness without significant changes in the blood carbon dioxide or blood sugar. Careful watching of the blood pressure is a great help in the treatment of coma. Another factor is hyperpyrexia. This may or may not be explained. It may be a terminal infection or a part of diabetic coma, perhaps as a concommitant dehydration or it may be due to cerebral origin. Insulin is very ineffective in the presence of fever.

One must remember that leucocytosis is usually present in coma. Also we still believe that frequent small doses of insulin are better in the treatment of coma than large massive doses at less frequent intervals.

Another point which is interesting is the relationship of diabetes and pregnancy. This subject has been ably discussed by Wilder. In the first place normal menstruation is the rule in well controlled diabetes, but irregular or absent menstruation is present in the poorly controlled. However, it would appear that amenorrhea and menstrual difficulty are more common in the well controlled diabetic than in the non-diabetic. Two cases at the present time are under my care which I believe are well controlled, and still are amenorrheic. This little point must be kept in mind, and I am reminded again of the place the endocrine glands seem to play. Conception is often difficult in the diabetic because of amenorrhea and failure of ovulation. We do not believe that the danger of possible transmission of diabetes should be a detremental factor to marriage if the patient possesses both the intelligence and economic security for continual satisfactory diabetic treatment, and if the physician explains the matter well to the diabetic. As to the effect of pregnancy on diabetics, usually tolerance is depressed during the first three or four months of pregnancy, so that larger doses of insulin are required. In the later months tolerance usually rises. This is due to the development of the fetal pancreas, which compensates for the lack in the mother. At birth the mother's tolerance may markedly decrease, while the infant may develop hyperinsulinism and go into hypoglycemia due to the relative hypertrophy of the infant pancreas. This is an important point to remember, for if this is true the infant may die unless glucose is administered at once. It is probable that many fetal deaths are due to this factor and a wise precaution is to administer glucose early after birth. Abortion and still birth are frequent with improper treatment, and unless the patient is carefully watched she may become very lax in her treatment during the months that pregnancy makes her feel uncomfortable. A point I would like to stress is that treatment of the pregnant diabetic demands careful and frequent watching since sudden transition of intolerance during the course of pregnancy is likely to occur. A rather recent work by Popoff in the Archives of Pathology may change our whole conception of this process. He believes that the neuro-vascular and trophic changes in the digits of persons due to arteriosclerosis of diabetes may be due to changes in the glomus system and not inflam-

matory, degenerative or obliterative changes in the large arteries.

The last point which I should like to bring up is the consideration of arteriosclerosis. I approached this subject with some fear, but after reading an article in the Annals of Surgery, I was rewarded by a statement which said: "The active treatment of obliterative arterial diseases of the extremities is, as a result of recent work, rapidly becoming a truly non-surgical procedure and may soon rightfully become the function of the departments of internal medicine." My purpose in bringing up the topic is to help stress again the growing conservative attitude toward these degenerative processes which has taken place during the past few years. Arteriosclerosis has always been one of the dreaded complications of diabetes, because of the disability due to gangrene. I think that everyone can remember when a gangrenous toe meant immediate high amputation, and I believe it is still done today by some. The economic loss which this has produced both to industry and to charitable organizations has been tremendous. Following amputation the profession soon lost interest in the case, and the fact that every now and then a gangrenous extremity would miraculously recover with no treatment led to an increased interest, and measures of treatment which result to an increase in the collateral circulation have been developed. At the present time amputation is considered much more carefully than previously. Ways of estimating the extent of the arteriosclerosis have been chiefly by x-ray and arterio-graphical studies. These are of help, but if positive, still do not tell much in the immediate prognosis. The importance of estimating possible disability is a necessary thing, especially in industrial cases. More studies need to be made on methods of determining good and bad circulation. Of late Starr of Philadelphia has introduced a test which may be helpful. Using a 1:1000 solution of histomine he introduces this into the skin by an ordinary scratch. A definite wheal manifests the evidence of good circulation, while the presence of no wheal or a very poor reaction shows a poor circulation. Studying a series of cases over a period of five years he finds that no case with a good wheal developed any trouble with the feet and that all but five cases who gave poor tests had evidence of trouble within five years. The dorsalis pedis artery was palpable in some of the cases which gave a poor histomine test. The importance of this is apparent, and more work needs to be done in this type of thing, using both the x-ray and histomine test together.

May I mention that arteriosclerosis is not only limited to elderly people, but may be found in the young as well. One case that I saw exhibited definite evidence of arteriosclerosis by x-ray at the age of 14. One point must be remembered in the treatment of gangrene and that is to always be sure no infection is lurking under the gangrenous area. If it is it should be treated as an ordinary infection with a wide incision before any thought of amputation.

In conclusion I should like to say that there are many other points of interest in this disease. The foregoing points are some which have interested me and may be useful in a more complete understanding of the diabetic problem.

Summary

Certain points have been presented for consideration in diabetes mellitus. They are:

(a) The role of the endocrine glands
(b) Insulin
(c) Coma
(d) Pregnancy
(e) Arteriosclerosis.

Discussion

Dr. O. J. Campbell: Dr. Cardle's remarks in respect to the surgical attitude toward diabetic gangrene are very well taken.

On the whole, we have gradually acquired a more conservative attitude toward the treatment of this disease. I recall a patient who developed localized gangrene of the foot with osteomyelitis of two metatarsals. We urged her to permit amputation because the condition was progressive and we had been unable to check the infection. When amputation was refused, the infected area was incised and the patient signed herself out of the hospital. About three months later she returned to the hospital with the foot completely healed and she was able to walk about without pain. Since that case, in my own work, I have been treating localized gangrenes with infection by generous incision and handled them as I would infections.

Dr. Regnier, at the General Hospital, has shown us that by using hot wet packs and hot foot baths many of these cases can be checked and the extremity saved.

There is a new method of treatment designed to assist in the development of collateral circulation which might be of assistance in case of threatened gangrene. I refer to alternate pressure and suction applied to an extremity which is encased in a glass boot. I have had no experience with the method but the reports in the literature would indicate considerable encouragement.

A word of caution when dealing with extensive gangrene—gas bacillus antitoxin should always be administered. The presence of such bacilli can be demonstrated by cultural methods in a very high percentage of cases and the unfortunate experience of having gas bacillus develop in an amputation stump is

a not infrequent occurrence. Where gas bacillus infection is suspected at the time of operation, a high amputation should be done and the flaps left open until the risk of infection is past.

Dr. F. W. Wittich: Dr. Cardle brought out some very interesting facts. It is gratifying also to learn that we are getting a better knowledge of the role that the other structures of the endocrine system play in diabetes and it is hoped that new light will be thrown upon the subject in the near future to clarify still many unsolved problems. I wish again to emphasize the point of giving repeated small doses of insulin in diabetic coma. It is to be regretted very much that the attention of the chiropodists is not brought more forcibly to the fact that they should know whether their patient has diabetes. Several years ago I presented a paper before their State Society with emphasis on the importance of doing a routine urine test on patients with ulcers on the toes and of not attempting to treat infected callouses or corns without making the required tests for diabetes or circulatory disturbances and referring them to a physician first. I think Dr. Cardle should be congratulated on presenting this very fine paper.

Dr. Walter Fink: I should like to mention the importance of the ophthalmoscope in diabetes. It is a very delicate index of the vascular changes. So many times cases that are apparently under control have fresh hemorrhages occur within the eye. I think it would be a good plan if this were stressed in treating diabetes, i. e., watch the vascular changes with the ophthalmoscope. Many times these people complain of refractive changes—a pair of glasses fitted properly suddenly become very blurred, and after getting them back to the normal state the vision clears up. In a number of our diabetic cataracts, if taken early, part of the opacity will clear up.

Dr. C. W. Rucker: I would like to ask Dr. Cardle if by using insulin he suspects he might not be hastening the arteriosclerotic process? Until a few years ago we practically never saw the retinitis of diabetes in patients under forty. Now within the past few years it is not at all uncommon to see this change in the retina in people around twenty or younger. Is Dr. Cardle, with his insulin, producing an arteriosclerosis or is he keeping these people alive long enough so that their vessels become sclerotic from the diabetes?

Dr. E. T. Evans: I would like to know if it has ever been shown in a diabetic under treatment, that the condition of the vessels has improved?

We see cases in which, when the acute crisis subsides, the affected vessels and the improved collateral circulation apparently restores the extremity to a fairly normal state but the arteriosclerotic process is still there and is still a thing to be watched and guarded against. Just because we have gone into an improved stage does not mean we have that individual cured by any means from the standpoint of his extremities.

Dr. R. Swanson: Dr. Cardle's paper was very interesting and complete. Pregnancy and diabetes, even since insulin, is a serious condition. In the past many mothers and babies died. Insulin has saved many in the last few years. The non-diabetic pregnant woman shows a disturbed sugar metabolism with a low sugar tolerance and an increased permeability of the kidney to sugar. In the pregnant diabetic it is accepted that the ovum shows a diminished vitality, and a high percentage of abortions, premature labors and stillbirths result even with the modern use of insulin.

The diabetic should be relieved of the stress of the second stage of labor if possible. An internist should be present during and after the labor to prevent avoidable complications.

Infections are common in the diabetic and many pregnant diabetics have died following labor from infection rather than the diabetes itself. The baby of the diabetic woman should be watched by the pediatrician since hyperinsulinism and hyperglycemia are common.

In gynecology, pruritis, dysmenorrhea, amenorrhea, metrorrhagia, menorrhagia and sterility are not uncommon in diabetes.

Dr. A. E. Cardle: In regard to Dr. Evans' question, whether or not insulin has any effect upon the blood vessels themselves, I do not believe that one can say that insulin will improve the degenerated condition within the blood vessel. This is a permanent change and while one may think that there is an improvement in the circulation it is due to improved collateral circulation and not a single vessel improvement.

Dr. Rucker's discussion was very interesting and I appreciate it very much. There is at the present time much controversy regarding treatment in the cases which have extreme retinitis or arterial sclerosis of the retinal vessels. Some feel that these cases are made worse by rigid diabetic treatment. I believe that good, careful handling of the diabetic does not in any way have a harmful effect on the existing retinitis and it really should help the condition if anything will.

I appreciate very much Dr. Wittich's discussion for the care of the feet in the diabetic is extremely important. At the University of Pennsylvania three chairs have been established in the Diabetic Dispensary solely for the feet. I believe that this would be an excellent thing for every diabetic dispensary having a large service.

In regard to the difference between lactose and glucose in the urine, it is well to remember that glucose will ferment if tested with yeast while lactose will not. This is a simple test and is one that should not be forgotten.

HEPATO-NEPHROMEGALIA GLYCOGENICA

Glycogen Storage Disease of Von Gierke

Dr. R. L Wilder

Abstract

Enlargement of the liver and kidneys due to excessive storage of glycogen was first reported by Von Gierke in 1929. Since that time sixteen

additional cases have been reported. Characteristic diagnostic findings taken from these reports are: hepatomegaly, enlarged head, protuberant abdomen, increased subcutaneous fat, small extremities, genu valgus, absence of splenomegaly, absence of ascites or jaundice. Laboratory reports show normal liver function tests, ketonuria, sometimes hypoglycemia, normal blood chemistry or lipemia due to increased cholesterol, normal cellular elements, normal coagulation and bleeding times, normal icteric index, usually, increased blood glucose following epinephrine. Failure of the usual epinephrine response may occur. Increased glycogen has been found at autopsy or biopsy, in the liver, heart, kidneys, skeletal muscle, and brain tissue. A specific cause, true for all cases, is not known. The prognosis for life is good. Death occurred from intercurrent infections, some mental and physical retardation has been reported in cases still living. No specific treatment has yet been determined.

Case Report—Three and one-half year old female child, with the only complaint, an enlarged abdomen beginning at six months, slight muscle weakness, and easy fatiguability. Normal history otherwise. Physical findings: Well nourished, fair color, prominent brow, enlarged head 53 CM circumference. Increased amount subcutaneous fat. Large protuberant abdomen, small arms and legs, genu valgus. Enlarged palpable liver, soft, smooth, regular border, not tender, extending below right iliac crest across abdomen above the umbilicus to left upper abdomen. Prominent pad of fat at base of neck posteriorly. Laboratory studies show negative blood Wassermann, negative Mantoux 1/10 mgm OT., slight biphasic reaction to Van Den Bergh test. Urinalysis, normal except for ketone bodies. Qualitative tests for five days on morning, noon and evening specimens showed daily acetonuria from one to four plus. Diacetic acid present on two days.

Blood: R. B. C. 4,150,000; W.B.C. 10,450; P.M.N. 43 per cent; Lymphocytes 57 per cent; Hemoglobin (Sahli) 79 per cent; Bleeding time 2 min.; Coag. time 6 min.; Icteric index 8.5. Blood Lipoids: Total fatty acids 504 mgms per cent, Cholesterol 186 mgms per cent, Iodine No. 109. Blood sugar studies: Fasting blood sugar 90 to 115 mgm per cent. Glucose tolerance .8 grams glucose per kilo by mouth. Blood sugar at 60 min. 197 mgm per cent. 160 mgm at 120 min. 105 mgms per cent at 180 min. Blood sugar, after epinephrine: Highest level, 227 mgm per cent at 60 min. 170 mgms per cent at 120 min. .3 C.C. ant. pituitary extract subcutaneously on fasting blood sugar. Highest point 140 mgms per cent at 30 min. .85 mgm per cent at 120 min. Blood sugar after insulin, 5 units subcutaneously on fasting blood sugar 115 mgms per cent give 88 mgm per cent at 30 min., 70 mgms per cent at 90 min., 65 mgm per cent at 120 min.

Liver Water storage test: 300 C.C. normal saline solution intravenously in 15 min. to control. Urine output measured at 20 min. intervals for three hours. Urine output collected by catheter, kept in place. Output of control compared to patient, showed storage of water in control, with failure of water storage and diureses in patient.

X-ray studies showed enlarged liver and right kidney shadows. Left kidney and heart shadows normal. Skull plates show depressed middle fossa of skull, displacement of sella turcica downward.

Summary

1. A case of enlarged liver and kidney in a 3½ year old female child is reported.
2. Evidence of a lack of ability of the liver to store water is found.
3. Intracranial pressure changes in the region of the hypophysis are shown.

Conclusions

1. That this is a case of glycone storage disease.
2. That the liver lacks ability to store excess intravenous saline.
3. That this disturbance may be due to hypophyseal or hypothalamic disturbance.

Discussion

Dr. N. Johnson: I would like to ask if this condition is known to occur in adults, whether it is a fatal disease, and what the prognosis is with these children?

Dr. H. B. Dornblaser: I would like to ask if this is present in children at birth?

Dr. R. L. Wilder: The oldest case that has been reported is an individual 20 years of age. It is a congenital disturbance of carbohydrate metabolism and to my knowledge there has been no case reported over 20 years of age.

The progress of the disease up to the present time has been one of increasing enlargement of the liver and then a recession in size. Glycogen disease in itself is not fatal. The only deaths that have been reported have been due to some intercurrent infection. There has been no previous report of a case in which there was internal Hydrocephalus. The enlarged head and olympic brow were brought out in Von Gierke's original report. There has been some work in Germany on the pituitary relationship to glycogen storage disease, but I have not been able to get that article up to the present time.

Dr. H. B. Dornblaser: Do you suppose you would have found these changes you have mentioned in a blood chemistry examination?

Dr. R. L. Wilder: Undoubtedly, she would have shown acetonuria at the age of onset. Changes in blood chemistry have not been uniform in all cases. The importance of blood chemistry findings has not been established.

The earliest age at which the enlargement of the liver was noticed was at four months. The mother noticed the enlarged abdomen, in this case, at six months. The disturbance of glycogen metabolism is congenital.

Jas. K. Anderson, M.D.,
Secretary.

NEWS ITEMS

Dr. Willis Shepard, has become associated with Dr. George Schatz, at Linton, N. D., in general practice.

Dr. C. V. Lawson, has joined the staff of the Jamestown Clinic, as a specialist in eye, nose and throat practice.

Dr. Bert M. Johnson, formerly in practice at Livingston, Mont., died recently at his winter home in Imola, California.

Drs. J. G. Thompson and T. L. Hawkins, Helena, Mont., spent several days at the Mayo Clinic, Rochester, last month.

Dr. Walter B. Scott, Ray, N. D., has been honored with the appointment of colonel, on the Governor's staff of that state.

Dr. C. L. Scofield, well known and popular physician of Benson, Minn., has recently completed 45 years of active practice in that city.

Dr. R. P. Frink, Wagner, S. D., has been appointed agency physician for the Yankton Indian Reservation, as successor to Dr. A. A. Rittan.

The Hennepin County Medical Society will hold an open house, with entertainment and dinner being served on the opening night of the Minnesota State Medical Association, Monday, June 24th.

Dr. Harold Pederson, 61 years of age, who has been in active practice in Minneapolis, as a physician and surgeon for over 30 years, died suddenly last month, on his daily call on one of his patients.

William J. Mayo, noted Rochester surgeon, dipped into his encyclopedic knowledge of medicine while in New Orleans, recently and wrote a two-word description for the prevention of humanity's ills—"horse sense."

At the meeting of the Council of Medical Education and Hospitals of the American Medical Association recently held at Chicago, the Trinity Hospital, Minot, N. D., was added to the list of approved hospitals for interne training.

Dr. A. A. J. Lange, a widely known figure in medical circles of the state of North Dakota, died suddenly at his home at Jamestown, March 18th, as a result of a heart attack. Dr. Lange practiced medicine in Sanborn 28 years and in 1926 moved to Jamestown.

Dr. Dennis F. O'Connor, one of the pioneer physicians of South Dakota, passed away on February 11th, after a short illness, at his home in Elkton. Dr. O'Connor had a wide circle of close friends scattered all over the state, that will mourn his death.

The amount of space already reserved for exhibits that are to be made at the coming annual meeting of the Minnesota State Medical Association, by leading firms that cater to the physicians, exceed that of any previous year, both in number of firms and space required.

Among the many distinguished medical men who are definitely scheduled to appear on the program of the Minnesota State Medical Association on June 24-26th, are Dr. William P. Murphy and Richard P. Strong of the Harvard Medical School, Dr. Percy Brown of Boston, Dr. Thomas G. Orr, Kansas City; Dr. Edmund Andrews, Chicago, and many others.

Mr. James H. Baker, Minneapolis newspaper man, editor and magazine contributor, is the new executive secretary of the Hennepin County Medical Society. Mr. Baker is a native Minnesotan, a graduate of the University of Minnesota and for a number of years was on the staff of the Minneapolis Tribune, most recently as Sunday editor. He served during the war with the Italian army and saw active service in the Austro-Italian sectors.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocyles or 370.2 meters). William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota is the speaker. The program for the month will be as follows: April 2, "Hand Infections"; April 9, "Leukemia"; April 16, "Ear Infections"; April 23, "Hysteria"; April 30, "Prenatal Dental Care."

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New Series

The Diagnosis and Treatment of Endocrine Disorders in Children*

Ralph H. Kunstadter, M.D.
Chicago

DURING the past decade, endocrinology has probably received more attention than any other field in medicine. A more advanced knowledge of the normal physiology of the endocrine glands has made possible an intelligent understanding of the various disorders. As a result of recent research, certain therapeutic agents are now available that satisfactorily influence the course of some of the many endocrine disturbances. Endocrinology, therefore, is no longer only an obsolete field of medicine, entailing only "museum specimens," but is a field that warrants clinical consideration out of which it is hoped that certain patients may be benefited.

Since a majority of the endocrine disturbances arise in infancy or early childhood, the responsibility for their early recognition and treatment falls upon the pediatrician. The obstetrician should realize the hereditary tendencies of certain endocrine disorders that may be transmitted by the pregnant mother to her offspring. Thus thyroid and pituitary dysfunctions not uncommonly are found in more than one member of a family and in different generations.

It is my purpose in this paper to discuss the diagnosis, and to evaluate some of the newer agents in the treatment of the more common endocrine disorders encountered in pediatric practice.

To understand and interpret correctly the various syndromes, we should remember that there is an interrelationship between the various endocrine glands. Time does not permit a detailed discussion of the normal and abnormal physiology of the endocrine glands, but it is an established fact that the thyroid, pituitary, adrenals and gonads are so physiologically related that a disturbance of any one of the glands may influence the function of another. Thus pituitary or thyroid dysfunction influence growth and sexual development, cortical adrenal disease is associated with abnormal sexual development and so on.

*Read before the Sioux Valley Medical Association at Sioux Falls, S. D., January 22, 1935.

Hypothyroidism

Thyroidism in children is usually characterized by a diminished function of the gland. Hypothyroidism may develop in infancy relative to a congenital aplasia or hypoplasia of the gland, giving rise to the familiar cretin, or it may appear in early childhood in the form of myxedema.

Infantile hypothyroidism or cretinism usually offers little difficulty in diagnosis. On the other hand, juvenile hypothyroidism is not always clearly defined, because the syndrome may primarily be either of thyroid or pituitary origin, an important differentiation from a therapeutic standpoint.

The interrelationship between the thyroid and the hypophysis has been recognized for some time and their interaction is probably favorable in that one may stimulate the other. It has been shown experimentally that extracts of the anterior lobe are capable of preventing atrophy of the thyroid

gland following hypophysectomy, and that daily intraperitoneal implants of fresh anterior lobe tissue in normal guinea pigs will produce the typical picture of hyperthyroidism.[1]

The isolation of the thyrotropic hormone[2] from the anterior lobe of the pituitary has also strengthened the thyroid-pituitary relationship. It is probable that increased or decreased function of the thyroid in many instances is a result of excessive or diminished thyrotropic hormone.

The diagnosis of hypothyroidism should be considered in all infants and children showing retarded skeletal growth, as shown by a comparison of the body measurements with the average normal and by roentgenographic evidence of delayed ossification. Evidence of a lowered body metabolism is present. These children are phlegmatic and are frequently mentally retarded. The skin is cold, dry and rough, and feels thickened. The hair is coarse, dry and brittle. The face is puffy and bloated. The features dull. The tongue may be large, thickened and, in cretins, protrudes slightly from the mouth, adding to the idiotic appearance. The voice is usually low and coarse. The abdomen is large and the bowels constipated. Generalized obesity may be present with prominence of the supraclavicular pads. The neck appears short and thick. The basal metabolic rate is below normal, and the blood cholesterol is elevated above normal.

The elevation of the blood cholesterol in hypothyroidism and its reciprocal relationship to the basal metabolic rate has been demonstrated in adults by Hurxthal[3] of the Lahey Clinic in Boston and in children by Bronstein[4] at the University of Illinois. The difficulty of obtaining accurate metabolic rates in infants and children is a sufficient reason for welcoming such a valuable diagnostic aid in pediatric practice. Recently Poncher and Visscher,[5] of the University of Illinois, have found that in hypothyroidism there is a decrease or complete cessation of creatine excretion which can be restored to normal by the administration of thyroid extract. Normally, in infants and children up to the time of puberty, creatinuria is found in both sexes. Hess[6] suggests that a study of the creatine metabolism may be desirable in the study of hypothryoidism and in the control of therapy in view of the fact that creatinuria occurs even before any definite change is noted in the basal metabolism and blood cholesterol.

This additional laboratory procedure may be of importance in differentiating primary from secondary hypothyroidism. We[7] have found in our cases of juvenile hypopituitarism showing a lowered basal metabolism, a normal or only slightly elevated blood cholesterol.

The treatment of these children consists primarily of adequate thyroid therapy, continued indefinitely, the dosage controlled by clinical observation and the laboratory procedures just described.

Schittenhelm and Eisler[8] attempted therapy with thyrotropic hormone and found that it did not influence the clinical picture of myxedema but resulted in a decrease of body weight.

In secondary hypothyroidism, pituitary therapy is of primary importance. Large doses, 15 to 30 grains daily of anterior pituitary lobe extract is apparently of some benefit in stimulating muscular activity and possibly growth. Hypodermic administration of anterior lobe pituitary growth hormone may be indicated. A further discussion of pituitary therapy will be included under hypophyseal disorders.

The administration of thyroid alone usually controls the anemia of these children. Nevertheless, iron should be prescribed as their appetites are frequently poor and the iron intake is small. For those children whose appetites are poor or whose diets are improperly balanced, calcium should be prescribed to meet the needs of the rapidly growing osseous system. Also, it has been shown that thyroid extract increases calcium mobilization and excretion. During the adolescent period iodine should be given to meet the demands of a physiologically stimulated thyroid gland.

Pituitary Disturbances

In childhood, the pituitary gland is probably responsible for the majority of endocrine disturbances. Its complexity and numerous secretions, governing the physiologic functions of many organs of the body makes it a target for insult and injury in the immature individual. Thus, acute and chronic infectious diseases, nutritional and nervous disorders, and mental strain may directly or indirectly unfavorably influence the normal function of this organ. Of prime importance is the hereditary factor that frequently predisposes the child to the various hypophyseal disorders. An inherently defective endocrine system may be illicted in the family history. Thus, pituitarism is not uncommonly present in one or more members of the immediate family or ancestors.

In order to interpret the various syndromes a few facts concerning the physiology should be mentioned, namely: that the anterior lobe of the hypophysis, primarily responsible for most of the disorders, is composed of three types of

cells; the chromophobe mother cells, non secretory, the acidophilic and basophilic cells, both secretory. The acidophilic cells are responsible for the secretion of the growth hormone and the basophilic cells for the gonadotropic or sex hormones. The hypothalmus and the posterior lobe are known to be involved in fat, carbohydrate and water metabolism. Recent experimental work on the function of the anterior lobe makes us believe that it also is concerned with metabolism.

Up to the time of puberty the growth hormone assumes the important role. As puberty is reached the gonadotropic hormone is secreted to carry on its sex developing function throughout the pubertal and adolescent periods. It has been stated that the two hormones are antagonistic to one another, and that an excess of one is responsible for a diminished secretion of the other. However, this is difficult to conceive in view of the fact that sexual development begins at the period of most rapid growth.

Hypopituitarism

Hypopituitarism in children is manifested either predominantly by growth deficiency, sexual retardation or a combination of both, usually depending upon the age at which the condition first makes its appearance. Thus, in infancy and early childhood hypopituitarism is characterized principally by growth deficiency.

Infantile pituitarism, infantile hypopituitarism or Lorain-Levi disorder is characterized by a general arrest of growth and development of all the organs and systems of the body because of inactivity of the anterior lobe of the hypophysis with the secretion of insufficient growth and sex hormones. Paltauf dwarfs, Lilliputians and achondroplastic dwarfs do not fit into this group because they do not present a general arrest of growth and development, the sexual development usually being normal. Infantilism due to nutritional disorders, chronic infection-diseases or rickets must be excluded. Cretins and mongols are easily eliminated by their characteristic features.

The diagnosis of infantile or juvenile pituitary growth deficiency can only be determined by a comparison of the body measurements with those standardized for the age.

Englebach[9] states that the diagnosis of anterior lobe disorder in infancy simply depends upon the growth increment throughout the first five years of life. A decrease in height of 1½ to 2 inches and a relative decrease in a number of the other measurements below the minimum for the age demonstrates retardation or arrested growth. If this has occurred from the first to the third year of life without having any other cause, such as infections, nutritional disorders, etc., anterior lobe deficiency should be considered. Body measurements on all infants and children showing either retarded or excessive growth should be taken at regular intervals.

Treatment of infantile hypopituitarism may be satisfactory in the early cases. Englebach[10] reports encouraging results in his group of cases treated with a growth hormone (Antuitrin-G) prepared by the research laboratories of Park Davis and Company; not yet commercially available. He administered from 1 to 5 cc. three to five times weekly. For our two cases we have been using Phyone, the alkaline extract of the anterior lobe prepared by the Wilson Laboratories of Chicago according to the method of Van Dyke and Wallen-Lawrence.

The hypodermic administration of growth hormone should be complemented with thyroid extract orally. Smith[11] showed experimentally that thyroid extract was a valuable adjunct in the treatment of hypophysectomized rats with growth hormone. The usefulness of anterior lobe extract orally is questionable, but we feel that it may be of some value if given in sufficiently large doses, 15 to 30 grains daily.

Hoskins[12] suggests that the body may build up a resistance to the growth hormone following long continued therapy and suggested that thyrotropic and suprarenotropic principles should also be used and recommends thyroid extract and glycerin extract of suprarenal cortex as alternates.

In interpreting the results of therapy it is to be remembered that growth to a certain extent is seasonal and is influenced by diet as shown by Mendel[13] and by Wang.[14] Growth also occurs in spurts at various age periods, so that an accurate charting of the body measurements over a long period of time is essential.

Froehlich's syndrome or dystrophia adiposogenitalis is the most common form of juvenile hypopituitarism and for the most part is probably a result of insufficient sex hormone secretion on the basis of anterior lobe insufficiency. There are many who believe that the posterior lobe of the pituitary plays a role in Froehlich's syndrome in view of the obesity and disturbed carbohydrate and water metabolism which are also features of this condition. Engelbach[9] states that in 70 to 80 per cent of juvenile obese subjects deficiency of the posterior lobe plays an etiologic role. However, since Cushing described the clinical syndrome of pituitary basophilism, confirmed by operations and autopsy as an an-

terior lobe disturbance, there is some doubt as to bilobar involvement in Froehlich's syndome.

The syndrome is characterized by a typical girdle deposition of fat extending from the lower part of the chest to the middle of the thighs. The neck, forearms, wrists, hands, lower legs and feet are free. The skin is soft, smooth and velvety and the face "pudding-like." The intelligence is good, but the temperament is usually lazy and placid. There may be either shortness or overgrowth of stature. There is retarded sexual development. In the male there is a tendency toward female configuration of stature. There is usually an increased tolerance for dextrose. The basal metabolic rate is frequently below normal and is due to secondary hypothyroidism not uncommonly associated with this condition. A pituitary tumor, although rare in childhood and adolescence, must be excluded by roentgenographic and neurologic examinations.

In the diagnosis of juvenile or adolescent hypopituitarism *primary hypogonadism* must be eliminated. The clinical features of hypogonadism or eunuchoidism are quite characteristic. The stature is tall, the skeleton slender; the head is small; the hands and extremities are long due to delay in epiphyseal closure, the lower extremities being disproportionately longer than the trunk. Dentition is delayed. The voice is soft, high-pitched and feminine. The less common fat eunuch closely resembles the hypopituitary type but rarely occurs before adulthood. The eunuchoids have little or no reduction in the basal metabolic rate frequently found in hypopituitarism. Increased tolerance for dextrose is not a feature of the eunuchoid. In hypopituitarism purine metabolism is abnormal—there being an elevation of blood uric acid with poor or delayed excretion.

For the obese subject a low caloric, high protein diet should be prescribed. The high protein content of the diet favors the production of urea which is known to have a definite diuretic effect, thereby causing a mobilization of water which is stored in the tissues. When the basal metabolic rate is below normal desiccated thyroid gland, one to three grains daily should be given.

Recently, endocrine research has brought out that the anterior lobe of the pituitary gland secretes hormones that influence fat and water metabolism directly; that is, effecting the retention of water in the tissues and the storage and metabolism of fat. As yet, these hormones have not been isolated in pure form and it is too early to state their clinical significance.

For many years, posterior lobe extracts has been used in the treatment of so-called pituitary obesity. There is a great deal of controversy as to its value, since it has been shown experimentally that the posterior lobe is not directly associated with obesity. Camus and Ronssy, Bailey and Bremer, Smith[15] and others have shown that slight injuries to the superficial gray substance of the tuber cinereum near the hypophysis, but with the hypophysis intact, will result in adiposity. Englebach,[9] however, believes that there is clinical value to the use of posterior lobe extract in pituitary obesity. He recommends that oral administration of desiccated posterior lobe and the hypodermic administration of pituitrin in increasing doses up to an intestinal reaction.

Personally, I have found little value in posterior lobe extract or pituitrin in the treatment of several cases of pituitary obesity. Another argument against its use is that pituitrin counteracts insulin which is a metabolic stimulant.

It is gratifying to know that something can be accomplished in the treatment of sexual underdevelopment in many of these children.

In 1932, Engle[16] showed experimentally the effect of injection of pregnancy urine extract on the immature male macacus monkey, namely: that there was an increase in the size of the testes due to tubule growth, an increase in interstitial cell mass, and enlargement of the seminal vesicles and prostate gland. The extract produced descent of the testes, growth and turgescence of the scrotum. In the same year, Smith and Leonard[17] using Antuitrin-S in hypophysectomized rats, found that spermatids and even sperm may be formed. They concluded that a beneficial effect on spermatogenesis might result from pregnancy urine injection in cases of pituitary insufficiency.

Our studies with the human subject, stimulated by this experimental work was begun the same year and reported in the Journal of Pediatrics in June, 1934.[7] We found that Antuitrin-S accomplished descent of the testes in all of three cases of cryptorchism, and enlargement of the testes and scrotum and the appearance of the secondary sex characteristics in three cases of genital underdevelopment (testes descended). In two cases characterized by pituitary obesity with normal genital development, treatment resulted in no increase in size of the genitals. Antuitrin-S alone did not stimulate weight loss and did not alter the typical pituitary distribution of fat. Since this report went into press we have treated other cases satisfactorily, and others have confirmed our results.

Pregnancy urine extract predominantly causes interstitial tissue hypertrophy and has little bene-

ficial effect upon the seminiferous tubules. However, it has recently been shown by Smith and Engle[18] that injection of castrate or menopause urine extract into hypophysectomized male rats has a beneficial effect upon the seminiferous tubules by virtue of its stimulating action upon the division of germ cells. They suggest that a more pronounced effect upon genital development can be expected by the combined use of prolan and castrate urine extract.

We have some reason to believe that large doses of desiccated anterior lobe pituitary, 15 to 30 grains daily, is of some value in these cases, whether it be by virtue of its synergistic action with prolan or because of the presence of thyrotropic principle.

Hypopituitarism in the juvenile and adolescent *female* is also usually characterized by the pectoral and girdle obesity associated with normal growth of stature, genital hypoplasia and amenorrhea or oligomenorrhea. In the older subject the distribution of hair closely resembles that of the male. In the female, hypopituitarism is frequently complicated by secondary hypothyroidism with the basal metabolic rate below normal.

As in the male, the treatment of pituitary obesity is frequently resistant. A low caloric diet is necessary and thyroid extract is of help in those cases complicated by hypothyroidism. In the hands of most investigators, Frank,[19] Mazer and Goldstein,[20] Smith and Engle,[18] and others. the use of estrogenic substance and prolan have been unsatisfactory. Smith and Engle suggest the possibility of using castrate urine because it induces follicular growth and estrin production. As yet this product is not commercially available.

Lawrence,[21] and Mazer and Goldstein[20] have reported the relief of amenorrhea and oligomenorrhea in many patients by the administration of large doses, 30 to 60 grains daily of anterior lobe extract. We are also of the opinion that large doses of anterior lobe extract are beneficial in this group of cases.

Diabetes Insipidus

Diabetes insipidus is of rare occurrence especially in children. It is characterized by the excretion of an enormous quantity of pale urine of low specific gravity, low in salt and nitrogen content—and by excessive thirst. Frequently there is evidence of involvement of the pituitary gland, probably the posterior lobe. The disease has also been attributed to tumors, injury, inflammatory processes, namely: tuberculosis, syphilis, and encephalitis involving the infundibulum, tuber cinereum, or the bulb, without any definite lesion in the pituitary gland proper.

The treatment of the disease is purely symptomatic in the form of daily hypodermic administration of concentrated (double strength) posterior lobe extract. In order to eliminate the painful injections, attempts have been made to obtain the specific effect of the posterior lobe by the internal administration of posterior lobe extract and fresh gland. The results have been ineffective. However, encouraging reports have been received recently of the treatment by intranasal insufflation of 40 to 50 mgm. of posterior lobe powder equivalent to the satisfactory results obtained by hypodermic injections of 1.5 to 2.0 cc. of double strength solution. This method not only has the advantage of ease of application, but eliminates intestinal, cardiovascular and other reactions.

I have personally observed symptomatic relief in a child by the intranasal application of one dram daily of pitressin jelly, the pressor principle of the posterior lobe inserted in a jelly base. (Parke Davis and Co.)

Hyperpituitarism in the juvenile and adolescent periods is characterized by a general overgrowth affecting all the organs of the body. Genital development is normal or increased. The history, which usually indicates a gradual process covering a period of several years, makes possible the exclusion of a pituitary tumor. Other than headache, which is not uncommon, due to hyperplasia and hypertrophy of the anterior lobe, there are no signs of intracranial pressure indicative of a neoplasm. The slender type of eunuchoid is excluded by the presence of genital hypoplasia, femininism, the greater disproportion between upper and lower extremities, and the small head. True *hypergonadism* is differentiated by the history of early epiphyseal overgrowth and union and macrogenitosomia in the absence of general body overgrowth, and by the frequent occurrence of hypertrichosis or hirsuitism.

The treatment of gigantism is limited to roentgen therapy over the hypophysis. The dosage and technique must be carefully determined by a capable roentgenologist, with the reservation in mind that damage may be inflicted upon the basophilic cells with subsequent diminution of sex hormone secretion.

The Syndromes of Precocious Puberty and Virilism

The syndrome of precocious puberty, sometimes called the syndrome of precocious menstruation, is usually characterized by early cyclic menstruation, occurring at or before the ninth year, precocious enlargement of the mammae, premature development of axillary and pubic hair and premature skeletal ripening.

There are three glands of internal secretion that have the capacity to produce this clinical syndrome, the pineal, the suprarenal and the ovary.

Pinealism is associated with macrogenitosomia, precocious development of the body, and early sexual manifestations. It is almost exclusively found in boys and is usually caused by a tumor. Neurologic evidence of brain tumor and increased intracranial pressure may be present.

Tumors of the suprarenal cortex, either benign adenomata or malignant cortical tumors, may also produce the picture of precocious puberty and virilism. In addition to the somatic and genital overgrowth, dermal symptoms consisting of hypertrichosis and pigmentation present themselves. In the female there is the tendency to masculinization at the expense of the feminine characteristics. There is a growth of beard and mustache, hair on the chest and upper thighs, masculine distribution of pubic hair, hypertrophy of the clitoris, roughening of the skin and deepening of the voice.

It has long been known that certain ovarian tumors produce disturbances of the sex characteristics. These tumors have been variously diagnosed as carcinomas,, sarcomas, teratomas, etc. Recently Novak[22] and others have discriminated between two large groups of tumors, those causing hyperfemininization, and those causing masculinization of the female patient. Pathologically, two diametrically opposite types of tumors may be responsible for the clinical syndromes. The granulosa-cell tumor arises from the granulosa cell and is made up of cells that are histologically and physiologically similar to normal follicular epithelium. The femininizing tendencies of the tumor are due to the excessive production of folliculin by the tumor cells which may be confirmed by determining the folliculin content of the blood and urine. The other group of tumors is the arrhenoblastomata producing defeminization and masculinization of the individual. Pathologically, these tumors are classified as testicular adenomata and originate from undifferentiated epithelium in the region of the ovary. While most of the ovarian tumors in children are highly malignant, the granulosa-cells and arrhenoblastoma are relatively benign and their complete removal has resulted in complete cures with regression of the abnormal changes and the restoration of feminine characteristics.

The treatment of the patient with the clinical syndrome of precocious puberty first of all necessitates an accurate diagnosis. Physical examination may differentiate a pelvic from a suprarenal tumor or neurologic and X-ray findings may indicate a brain tumor. Qualitative and quantitative determinations of the folliculin content of the blood and urine may aid in confirming the diagnosis of ovarian tumor.

The prognosis depends upon the early diagnosis, the location of the tumor and the degree of malignancy. The pineal tumors are least amenable to surgery. The highly malignant ovarian tumors, even after complete removal followed by roentgentherapy, frequently metastasize and cause early death. Granulosa-cell tumors and arrhenoblastomata offer a more favorable prognosis. The abnormal changes tend to disappear and there is a gradual return to the normal following their complete removal. The removal of suprarenal tumors also may result in improvement depending upon the degree of malignancy. Roentgentherapy for suprarenal virilism in the absence of malignancy may be of some benefit.

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Concerning Irregular Practitioners*

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THE subject of this address concerns practitioners who are irregular.

We are making a comparison between the regular medical practitioners and those other persons, the so-called Irregulars—who also claim to be competent to practice in the science and the art of treating human beings for their ailments and their betterment.

In this field we find practitioners who are licensed and practitioners who are not licensed.

In this field we find licensed practitioners who are irregular, and we may find unlicensed practitioners who are regular and many indeed who are irregular.

In the field in which we are now inquiring, the law has assumed to recognize several classes of practitioners, some of whom it requires to be licensed.

The law of our state, covering the practice of medicine, names five classes of practitioners, who are required to be licensed by a Board of Examiners as to their fitness in order that they may be legal and regular practitioners.

These licensed classes of practitioners are:

1. Licensed physicians and surgeons.
2. Licensed dentists.
3. Licensed optometrists.
4. Licensed osteopaths.
5. Licensed chiropractors.

All of these classes of practitioners, when licensed, and when practicing within the field of their license, are regular practitioners.

In the days of old, we used to recognize instantly the term "doctor" as applying to a physician and surgeon, who was a practitioner of medicine. Then, it was a specific, as well as an honored, designation. Today we note the term to be used so much in the generic sense. Outside of the field of medicine we have our Doctors of Law, our Doctors of Philosophy, our Doctors in Literature, our Doctors in Religion and what not.

In the field of medicine or therapeutics, we see the term "doctor" quite indiscriminately used for practitioners of every kind, regular or irregular, licensed or unlicensed.

In the law of our state, the licensed dentist is a doctor of dental surgery. A licensed chiropractor is a doctor of chiropractic. The licensed osteopath is a doctor of osteopathy. The licensed optometrist who is called an optician in the law, generally classifies himself as a doctor of optometry. So it happens that a licensed physician and surgeon is now not distinguished, if not extinguished, by prefixing "doctor" to his name. Rather, he differentiates himself from the general class of practitioners by post-fixing M. D. to his name.

The law of our state names practitioners who are not required to be licensed.

First, we have those who practice cults, such as Christian Science, or other religious forms of worship, devotion or healing. They are practitioners without license so long as they do not administer or prescribe drugs, or perform surgical or physical operations.

Further than that, the law mentions midwives and requires them to be registered, but not licensed. It also mentions professional nurses who must take an examination and be registered, but not licensed. These latter two, of course, so far as law is concerned, are limited in their activities as practitioners.

So we have in the field of law applying to practitioners, who treat human beings for their ailments, and in the field of what may be termed the practice of medicine, practitioners who are licensed and practitioners who are not licensed, all of whom may be regular practitioners so far as the law permits or prescribes, whether they be licensed or not licensed.

In addition to the practitioners named, who may be termed legal practitioners, are other practitioners in fact who assume to treat human ailments, and receive pay for it without any legal standing in the law as practitioners. Such are not practitioners at all in law, but in fact, by reason of their assuming to be practitioners they become illegal or so termed irregular practitioners.

In this class may be mentioned naturopaths; various forms of therapists, electro-physio—Harmone, Chrome, Hydrotherapists—and what not. Also the so-termed miracle men, faith-healers, bone-setters and such like.

In our setup of the law applying to practitioners, whether licensed or not, as practitioners, the practice of medicine in its definition is built

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around a physician and surgeon who must come into a license to practice with a high degree of education, much learning in the art and science of medicine, and with qualifications otherwise as a man, and a gentleman, in order to diagnose and treat human ailments. Such, of course, when licensed, and practicing within the law of their license, are regular practitioners.

Then the law proceeds to create exceptions, and by creating exceptions to recognize other classes of practitioners.

First, in the line of exceptions, is the osteopath. They can practice as practitioners, but they must not assume to be a physician or surgeon, nor profess to administer or to prescribe drugs, nor must they perform surgery.

Next, in the line of exceptions which recognize practitioners, are the chiropractors. They must not prescribe or administer medicine or drugs, perform any surgery or practice obstetrics. They may use the title "Doctor of Chiropractic," but not the titles "doctor," "physician" or "surgeon." They are authorized to adjust any displaced tissue of any kind or nature and now under the law (Chap. 82 Laws of 1933), passed at the last Legislature, they may practice physiotherapy, electrotherapy, and hydrotherapy as taught by chiropractic schools and colleges. These three terms, as usually defined, apparently mean the treatment of disease by the use of natural forces, such as light, heat, air, water and exercise, the treatment of disease by electricity, and the treatment of disease by the use of water.

Next follows, as practitioners, dentists authorized to practice dentistry; and optometrists authorized to measure eye vision, to apply objectively corrective appliances.

Midwives and professional nurses have a status in the law, as if practitioners, but their rights as such seem to be wholly auxiliary or supplemental, as aids to regular practitioners.

The last exception prescribed in the law, recognizes as practitioners those cults such as Christian Science or other religious forms of worship, devotion or healing, not required to be licensed but prohibited from administering or prescribing drugs or performing surgical operations.

Thus, we see how the law prescribes in fixing who are and can be regular and legal practitioners, and the respective fields of practice in which they may operate. All are required to be licensed as practitioners excepting religious cults such as Christian Scientists.

It is obvious, of course, that a licensed practitioner remains a regular and legal practitioner only so long as he confines his practice within the field of operation for which he is licensed. When he otherwise performs or practices in the art of healing, he becomes an irregular practitioner.

Primarily, the right to practice the art of healing and to treat human ailments, is granted by law to physicians and surgeons, licensed so to do by our State Board of Medical Examiners.

Our Medical Practice Act, as has been noted, creates a broad field of practice in the art of healing in which licensed physicians and surgeons alone may generally operate with special privileges and special limitations for other practitioners as hereinbefore noted.

The Medical Practice Act prescribes penalties for its violations. A regular and legally licensed practitioner who becomes irregular, is a violator of the Medical Practice Act.

Regular and licensed physicians and surgeons, who violate the law in their methods of practice, are irregular practitioners and subject to prosecution as such.

Osteopaths who step beyond the fields of their practice of osteopathy in their treatment of human ailments become irregular practitioners.

Chiropractors who step into other fields than chiropractic, likewise become irregular practitioners.

It is difficult to determine what are the limitations of the field in which chiropractors claim the right to practice. Already it is very evident that they claim their field in the practice is not limited to the adjustment of displaced tissues. At the last session of our Legislature, they secured recognition in the law of their right, as chiropractors, to practice physiotherapy, electrotherapy and hydrotherapy as taught in their schools and colleges. This confuses as well as confounds. What these physio, electro and hydrotherapies are, in accordance with the usual definition, and what they are as taught in their schools and colleges may be two or a dozen different things or ideas.

The Board of Medical Examiners have the duty imposed upon them to aid in enforcing the Medical Practice Act. Unless there exists in communities where irregular practitioners are operating a public sympathy to uphold the law, and unless also the physicians and surgeons located in such communities, actively aid and assist, not as prosecutors but in a co-operative way, the road is difficult for the Board. This Association has within itself great strength and power if united to help enforce the law, not for themselves but for the public good.

Problems of Hospitals in Small Towns and Rural Areas*

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Willmar, Minn.

THE care of the sick throughout the ages may be taken as the index of human progress. The "small-town" hospital may be taken as the original hospital for in a very ancient Hindu book we find a law that provides that "Each village is to construct, under the direction of the health officer, a well-ventilated, strong building, protected from dust, wind, smoke, noises and odors." Money for maintaining same was to be obtained by a tax on every rupee of the gain of the merchants.

Today we find the hospital in towns of 10,000 population or less, whose main support comes from the farming interests surrounding it, suddenly thrust into a new position of importance and responsibility, due to the fact that that percentage of the people who heretofore may have had the means to go to larger centers for their care now are forced by necessity, if for no other reason, to look to the local institution for relief in time of distress. In so doing they have learned that after all such a hospital can also serve them well in times of prosperity. So importance and responsibility have come to us in the small hospital field to both serve well now and to hold this new interest.

A few statistics gathered at random shows that 51 per cent of the general hospitals in the United States have 40 beds or less, while in Canada 77 per cent. In Minnesota there are 136 rural hospitals with 4,480 beds, the smallest hospital having six beds and the largest 201 beds. In the four cities of Minneapolis, St. Paul, Duluth and Rochester we find 7,230 beds in 41 hospitals, the smallest having 10 beds and the largest 1,050 beds and if we scale Rochester's bed capacity down to the average of other cities of 20,000 population where they have not made arrangements to hospitalize a goodly proportion of the sick of the rest of the United States we find that the fifty-fifty proportion is maintained. It has been taken as a criteria that the rural citizens should be provided for at the rate of two beds per thousand people, while the urban masses should have five beds for each thousand. I think under present progress and education that this figure of two should be doubled to four, for more and more are the rural residents realizing that their local hospital has become a better place to get well in, to start their babies out in life in and to look to for happiness in health. Statistics further show that of the 2,901 counties in the United States with less than 100,000 people, there are 1,300 rural counties without hospitals. Does this mean that 50 per cent of such people do not have adequate care? It does to a degree, but a further study shows that the hospital field must turn its interest to better hospital distribution to more isolated areas, while in others there should be consolidation with elimination and hence more perfection.

The subject assigned is in the plural and says "problems." Hence I will confine myself to some of the situations that are distinctive to our rural hospital in its intimate contact with those whom it serves; also to suggest some way and means that we may help to solve our problems by mutual interest and open-minded discussion.

First of all, the "Court of Human Relations." Here we run against a most outstanding difference for every case in a rural hospital is a matter of interest to all the community, and not that of a small group within the community. It is here also in this wide contact we can do the most good. If the hospital is giving the service, if its death rate is low, if within the four walls there is human kindness, simple, straightforward honesty and good care, it does not have to fear community criticism. But let the opposite hold true and that hospital soon finds a dwindling daily census. Fortunately the old fears of the rural hospital being a place "where they always operate" or "where people go when terribly sick," or where death never takes a holiday is vanishing. The public of the smaller community is learning that examinations are made looking towards preventive measures, that people do get well, that they have X-rays and laboratories and good nursing. This change of attitude can be enhanced by hospital education coming from those who serve and by educating those who serve to be better educators. Deceit, fraud, dishonesty and mystery have no place in rural hospitals for sooner or later this loss of trust is freely discussed and the income sheet figures go down.

Second, the hospital is and should be a center

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of medical education. Mothers feel free to "run in" and have the baby weighed. By the intimate contact of the hospital much good can come to the individuals, to community health, to national problems. The superintendent and the nurses should be able to present at P. T. A.'s, the 4-H Club meeting, rural community clubs, and by their own social contacts, discussions pertaining to hospitalization. If the rural hospital would undertake to explain vivisection in its real light, that situation could be quickly and readily remedied. In health forums practical preventive medicine and modern hospital care could be presented in a most delightful manner. Legislation concerning hospitals could be much easier accomplished by this direct public contact. Let us make the most of our opportunity.

Next, the nursing situation: It is my opinion that nursing schools in our smaller hospitals are going to pass from the picture, if and when these hospitals have certain assurances from the nursing professions that the needs of such hospitals will be taken care of in times of plenty. Small rural hospitals cannot afford to train nurses under present standards. The small hospital that I represent did away with its training school in 1930 and by so doing we cut our nursing costs in half immediately. We have been able to give many more graduates employment and we have given our patients excellent care with many less worries to ourselves. But if it should happen as did happen in the years of good incomes, that our hospitals are furnished with the poorest of the R. N.'s, if indeed we are able to get any at all, and then at costs almost prohibitive and with likes and dislikes displayed on every hand, we shall be forced to set up a training school for practical nurses, independent of top-heavy regulations in order to give our people both in the home and in the hospital as good care as we feel they could get from such a system.

The dietitian is a problem in the type of hospital that we are talking about. The doctor in many cases works out the diet or leaves it to the head nurse. I believe that there is one way in which we could work out a solution and that is if three or four hospitals within, say 30 or 40 miles of each other, would co-operate and procure the services of a dietitian. Let her spend an equal division of her time in each hospital, work out the week's menu, take care of the special diets and if something urgent presents itself it could be taken care of by mail or telephone. In this connection, many hospitals, particularly during these times, can obtain a considerable amount of foodstuffs and service from those who owe the hospital money. With a properly trained person to suggest and supervise the use of these products they could be turned to a good advantage.

A completely equipped laboratory is almost a necessity in modern hospital practice. Usually in the small hospital the work is left to a nurse, the doctor or not done at all. I am becoming convinced that a laboratory technician is possible in almost every hospital. Charges can be made at least ample to meet her additional expense and in rural hospitals if her services are made available to all the doctors in the community, even to the extent of making arrangements for going to the doctors' offices in the smaller towns when he needs some work done, she can be a real asset in caring for the sick.

Accounting has been one of the things in which the smaller hospital has been very lax. In our hospital, in 1930, under the direction of a registered accountant, a system of bookkeeping was installed and under his guidance each year records and statements of real worth have been compiled. We have been able to determine costs by departments and such other costs and information as would help us. Our little hospital provided 3,226 patient days in 1934, and served 19,300 meals, or an average of 55 a day. The maids ate 17 per cent of the meals, the nurses 30 per cent, and the patients 53 per cent, or approximately one meal per employee to each meal served a patient. Our actual cost per patient per day was $4.41. Our food cost per meal was $.12, help $.062, and gas $.014, making a total cost per meal of $.196. Our death rate was a little over two per cent, with .06 per cent under 48 hours. Now it's nice to know these things in a small hospital for we can then take them to the public, explain them and with that knowledge there will be much less false criticism from the community. People like to feel that they are being taken into confidential relationships concerning other peoples' business.

Hospital records, that bugaboo of all small hospitals—to get the doctors to keep them is still a problem to be solved. The younger man has had that training and takes to it better and I believe he can do much to make the older practitioner improve himself. No older man likes to see a younger man outdo him. Show the older doctor some good charts that young Dr. So and So keeps and you can improve the situation. I believe records are absolutely essential. There might be some simplification or consolidation but in the main it must be a continuous application to the problem that will eventually solve it.

Physical equipment in smaller hospitals is be-

coming better. Basal metabolism, X-ray, the newer splints, anesthesia machines and physiotherapy are becoming more and more the rule than the exception, but there is much still to be desired. Rooms in our hospitals have not had too much attention. I would suggest to all small hospitals that they begin to make their rooms more colorful, give them some variety and you will be matching some of the competition in the larger centers. We have attempted to do this by colorful wall decorations, bright figured curtains, beds and dressers in soft colors, and attractive bed spreads which do not cost any more than the drab everyday color schemes.

A very special problem in all hospitals is that human being whom some hospital executives feel furnish little joy in their lives. Such a person is known as the "doctor on the case." In the small hospital the doctor checks in to all of the employees instead of to a board where his name lights up if he remembers to push his button. In other words, the life of the doctor in the rural area is wrapped up in a most intimate way with those who serve with him and are served. I wish to challenge a statement made in a recent article that the rural doctor has difficulty in keeping abreast of the times. I can only speak for those of the states represented here in the Northwest, but with the excellent literature, the post-graduate courses that now come out to the county medical societies, the numerous short courses given at the Universities, the awakening realization of the interdependence of the medical profession and that all must keep up with the progress in medical science, there is certainly the opportunity for everyone to be informed on the newest of practices. Herein lies a real challenge to our small hospitals to so keep up with the times that when the doctor wishes to use some new piece of apparatus which has been approved as useful it is present, that when he wishes to carry out some new technique of professional care the hospital is ready to assist him. By these statements I do not mean that the hospital should buy every fad, but from time to time certain things come into general use and these should be at hand.

Staff meetings are difficult but will improve as medical societies educate their members that in frank discussion there can be progress and as soon as members of these rural hospital staffs learn that the only patients they are concerned with are his own, just that soon will harmonious staff meetings be a success. The success and failures within the hospital walls should be a sacred trust both to the doctor and the nurse and treated and kept as such, for no man or woman says an unkind word against another of the same profession without hurting that profession as a whole and hence being reflected back on the very individual who speaks out of turn.

Rural hospitals should take their place in the hospital fields by becoming active members of the National and State Associations and being active in every sense of the word. Hospital Day can be as sucessfully observed in small communities as in the larger cities. Have a reunion of the mothers and babies born during the year; have a tour of inspection and a light lunch for the general public; send speakers into the other local organizations to present the significance of the day; make it one of real community interest and the response will be worth while. Further, let me urge that the smaller hospitals respond to requests coming from recognized authority when the call comes for legislative action, for information concerning some particular problem, take part in convention programs and discussions and much good can come to all by this interchange of ideas.

Lastly, there is that problem to the small hospital of the American College of Surgeons. The college first started to raise the standards of the surgeon and had a most gratifying and beneficial result. Then it found that the surgeon, in order to practice better surgery, needed a better workshop and that the hospitals needed treatment. We of the rural hospitals are thankful for this interest. Some of us were able to meet the minimum standards and were recognized and there is some satisfaction in our hearts. Others are trying to bring their affairs up to this standard so that they, too, may be accepted. Thus the small hospital has been helped to a marked degree because of this interest in them and the public is beginning to see the light of its value.

As a last suggestion: If the College of Surgeons or the American Hospital Association could see its way clear to have inspections as heretofore, but also to be able to put men into the rural hospitals to educate by making an investigation into the methods of the hospitals and then to suggest ways and means of improving on those methods as applying to modern hospital administration, I am sure that all hospitals would welcome such a call from a representative from so worthy an organization as we are the guests of here today.

And so the rural hospital is coming into its place among its big brothers, trying by self inspection to apply many of the fine suggestions handed down by those whose life study has been the betterment of hospital administration, inspiring us to learn more, to strive for and hoping to attain a

(Continued on Page 244)

The Diagnosis and Treatment of Acute Sinusitis*

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IT IS WELL for us to remember that sinus infection falls into one of two groups, i. e., acute or chronic. The former is as a rule a self limited disease, and nine out of ten cases can be handled by the well trained internist. The latter group, with which this paper is not concerned, almost always requires the aid of the specialist.

It is worthy of emphasis that every coryza or head cold is attended by involvement of the sinuses. The nasal accessory sinuses are only outpouchings of the nasal mucous membrane, and it is not possible to have inflammation of the latter without involvement of the former. If the above is true the term "acute sinusitis" can almost be considered synonymous with acute coryza.

To the laity the presence of sinusitis necessitates pain as its cardinal symptom. As a matter of fact, hundreds of cases of acute sinus infection occur and are spontaneously cured with neither patient nor physician having been aware of the sinus situation. One need only examine with the nasopharyngoscope a few cases of acute coryza, which have reached the suppurative stage, to prove to his own satisfaction the truth of this statement. Invariably pus will be found on the lateral nasal wall, having as its origin one or more of the accessory sinuses.

Why, then, do some experience pain with a sinus inflammation while others do not? The answer is largely an anatomic one, depending upon the size and freedom of the sinus ostia. In those sinuses having large ostia which are not blocked by abnormal nasal structures, such as misplaced or enlarged turbinates or a deflected septum, the escape of secretions will be prompt, and intra-sinus pressure does not occur. Under such conditions pain is absent. On the other hand, where the ostia are small and crowded by surrounding tissue, drainage is impaired, pus is formed faster than it can escape, pressure is produced in a non-yielding bony space, and the result is pain. The former type seldom comes to the attention of the physician, the latter almost always does. We may then, to advantage, classify all cases of acute sinusitis into two groups: First, those without pain which require little, if any, treatment. Second, those with pain which do need treatment.

One need not dwell upon the diagnosis of the first group. It follows that all cases of acute suppurative coryza are at the same time cases of suppurative sinusitis. The second group, i. e., those with pain will require more careful study for accurate diagnosis. The symptoms presented will be one or more of the following:

1. Symptoms of an acute cold.
2. Pain.
3. Tenderness.
4. Discharge.
5. Edema.
6. Disturbance of equilibrium.
7. Disturbance of the special senses.
8. General symptoms of an acute infection.

The symptoms of an acute cold are always present, except in those cases having an antrum infection secondary to a dental abscess. When pain is present it is the dominant symptom and urgently demands relief. Sinus pains frequently show a tendency toward periodicity, occurring at a certain time each day and having a fairly fixed time for disappearance. It is a good prognostic sign when the pain begins to appear later in the day and disappear earlier. The severity of the pain varies from slight discomfort to agony. The location will vary depending upon the sinus involved. A suppurative condition of the frontal sinus usually causes pain in the lower frontal region, but may be referred to the eye, top of the head and temporal region. As a rule maxillary sinus disease gives pain in the face, but sometimes it is referred to the frontal region, leading to a false diagnosis. The ethmoids give rise to pain in the orbit, forehead and vertex, while the sphenoid discomfort is almost always occipital, but may be well diffused over the posterior two-thirds of the head.

Tenderness can be elicited in only a limited number of cases. The frontal, maxillary and anterior ethmoids only are near enough to the surface to allow palpation.

One of our best diagnostic points is the presence of a purulent discharge. If we rule out foreign body, nasal lues, retropharyngeal abscess and diphtheria, we can accept a purulent nasal

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discharge whether found in the anterior nares, nasal passages or nasopharynx as absolute evidence of a suppurative sinusitis. If it is possible to determine the location of this pus, it frequently aids greatly in deciding which group of sinuses are involved, for the frontal, anterior ethmoids and maxillaries drain into the middle meatus, the posterior ethmoids into the superior meatus and the sphenoids into the sphenoethmoidal recess.

Edema exists only in the extremely severe cases and is, of course, noticeable only in disease of the frontal, anterior ethmoids and maxillary sinuses. When this symptom occurs prompt measures should be used to secure ventilation and drainage. Disturbances of equilibrium may appear, consisting of vertigo, faintness or blurred or darkened vision. Special sense disturbances have to do mainly with olfaction and vision.

There are three special aids in sinus diagnosis which should be mentioned:

1. Transillumination.
2. The nasopharyngoscope.
3. The roentgen ray.

The first two should be used in all cases, the third may be reserved for those cases which are slow in yielding to treatment.

With transillumination much information of value can be gained concerning the frontal and maxillary sinuses. The nasopharyngoscope, which is really a tiny cystoscope, locates the origin of the nasal pus and gives a view of the sphenoethmoid regions and nasopharynx that can be obtained in no other way. The use of either of the above can be mastered by anyone with some practice and instruction.

The treatment of this acute sinus condition, therefore, calls for two things: 1. The general treatment of the acute cold. 2. The treatment demanded by the local condition.

We will confine this discussion to the second division, i. e., the treatment demanded by local conditions. Here the primary indication is to secure adequate ventilation and drainage. Under normal conditions the cilia, which are present on the mucosa of all the sinuses and nasal cavities, play a very active part in moving the normal mucous secretions from the sinuses and nose. It has been adequately demonstrated that a sheet-like film of mucus, largely due to ciliary activity, is constantly passing downward and backward into the nasopharynx. We must remember that these important cilia have been greatly damaged or rendered functionless by the acute infection. If we can supply this deficit by allowing air to enter the nose and the pus to escape from the sinuses, most cases will result in spontaneous cure.

Surgical procedures should be put aside until one is sure that palliative measures will not secure results. Nasal medication in the form of sprays or drops will do much toward reducing intranasal swelling. The medicaments used may be varied with the particular case. Some cases respond well to a three per cent aqueous solution of ephedrine, others need adrenalin chloride in a dilution of 1:6000, and still others seem to respond best if antipyrine, ½ to one per cent, is included with one of the above, while particularly violent and painful cases may legitimately receive cocaine hydrochloride, ½ to one per cent, combined with one or more of the above. Quite recently benzedrine, a synthetic compound similar to ephedrine, has been available. The benzedrine inhaler, which is a small cylinder of vest-pocket size, is easily used and allows the ambulatory patient to have available at all times a constricting agent. Where swelling and congestion is quite marked, this inhaler will not give sufficient shrinkage. Another new remedy is neosynephrin in ¼ or one per cent strength, which can often be used to advantage by both the physician and patient.

These shrinking mixtures must be used frequently enough to keep the nasal passages free. Sometimes this calls for administration as often as every fifteen minutes. Then, too, the solution must reach the swollen tissues or results are not secured. This can be done by the introduction of cotton pledgets soaked in three per cent ephedrine, weak adrenlin chloride, two per cent cocaine hydrochloride, or combinations of the above. Never use 1:1000 adrenalin chloride. In fact, some patients will not tolerate the weaker solutions. Germicidal agents, although widely used, have a very limited value.

For pain, analgesics should be given. In mild cases acetylsalicylic acid, when needed, may give results. Many cases require more active and potent remedies. Morphine should not be withheld when needed, although it is best first to try other drugs. If cold applications give relief they should be used. The same applies to heat, although it is doubtful if either has much influence upon the actual pathology. Vaccines during the attack probably are of no value. There is, however, considerable evidence demonstrating their worth as prophylactic measures. Suction, used by the physician, will sometimes aid in establishing drainage, always avoiding too great a negative pressure.

The patient, during the course of an acute sinus infection, should be instructed to avoid doing certain things. College students are particularly liable to swim with acute nasal infections. This should be carefully avoided, as it tends to aggravate and distribute the infection to other slightly involved sinuses, or to the ears. Excessive and too forceful blowing of the nose should not be done. Many cases of acute otitis can be traced directly to this unwise procedure. There is no danger, whatever, in the patient using suction by a sudden backward drawing in of air through the nostrils. The fairly common practice of copious and forceful irrigation of the nose with saline or other solutions, is mentioned only to be condemned, for the danger of producing an otitis media is too great to justify this procedure.

Under such a regimen as described above most cases will get well. Some, however, have such marked blockage of sinus apertures and unusual virulence of infection, that it is impossible to secure draining by palliative and conservative measures. These, then, require surgery, which is beyond the scope of this paper. One should be on guard for such cases. Where edema increases, temperature elevation persists, toxicity is more marked, the leucocytes mount, the eye swells shut, and tenderness is greater in spite of all remedies, surgical interference will usually be necessary to effect a cure.

Problems of Hospitals in Small Towns and Rural Areas

(*Continued from Page 241*)

higher place among you who have reached the pinacles of prominence in the hospital field. In closing I am going to give you Edgar Guest's tribute to the rural hospital and while, to most of you, it is not new, I should like you to take from it the feeling of kindliness that it imparts as an expression of the good will that we of the small hospital bear to the others who administer in the larger places of hospital endeavor.

THE LITTLE COUNTRY HOSPITAL

EDGAR A. GUEST

The little country hospital is hidden out of view
And people seldom notice it as pleasure they pursue,
But let an accident befall—which is the fate of men—
The proudest man is glad to see the small-town doctor then.
And in that little hospital which humble folk maintain,
He'll find that hearts are merciful and quick to comfort pain.

It isn't like the city place, with sections blocks apart,
Where every patient's listed as a number on a chart
And specialists for this and that convene to thumb him o'er
And ask a thousand questions of the ills he's had before.
For in the country hospital, which lacks all pomp and style,
The surgeon on his morning round has time to chat awhile.

And whether pain be in your groin, your stomach or your toe,
The cause of it the doctor there assuredly will know.
He will not shunt you round the place for rays of that and this,
He'll diagnose your case himself and very seldom miss.
And whoso'er shall tread the hall when you are free from pain
Will stop to speak a cheery word and wish you well again.

So, little country hospital, which humble folks support,
Which struggles for existence, since its funds are always short,
I pay this simple tribute now to all your tender care
In lessening the hurt and pain which mortals have to bear,
And pray for God's rich blessing on the men and women brave
Who give their every ounce of strength another's life to save.

The County Health Officer in South Dakota*

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MUCH has been written of him and many have laid claim to the designation but without fear of successful contradiction, I nominate the county health officer of South Dakota as "the forgotten man." Someone, more daring than I, might contend that the county health officer of South Dakota cannot be "the forgotten man" because he really "never was." Be that as it may, it appears that he deserved this appellation long before its recent coinage gave it especial prominence. If the county health officer "never was" it is largely because, from the beginning, he never developed an activity which remotely suggested that he really cared to be. He never attached sufficient significance to his office nor to its great responsibilities. From this state of quiescent indifference and amicable docility he has never fully awakened, and seems to have been largely forgotten by the power that created him, much as if such power never wished him to be.

Presently I shall more fully enumerate and comment on various phases and factors that seem to have placed the county health officer in his present unenviable position; my reason for presenting the subject in this manner being dictated by a strong desire to see him elevated to a position of greatest usefulness to the community he serves; to a position of dignity commanding respect; and finally, to see that his compensation becomes more nearly commensurate with the duties and great responsibilities of his office.

The indifference, lack of aggression, willful or passive ignoring of health regulations and other undesirable attributes of many county health officers seems to have fostered and encouraged the present state of affairs.

To summarize:

1. He does not himself initiate and direct public health education, including the various phases of disease prevention.

2. He does not promote the health programs of his county.

3. Instead of being actively aggressive in these matters he passively submits to health programs initiated by others; too often programs carried on by lay organizations.

4. He does not earn the respect of the lay public or the medical profession.

   A. By vigorous and impartial handling of contagious diseases.

   B. By manifesting some active interest in the problems concerned with the distribution of such commodities as water, milk and other foodstuffs.

All here will agree that he does not receive proper compensation, but this feature recalls the old chicken and egg controversy. One wonders which should come first, the service or the pay. If the above indictments are true then compensation was never deserved. It is true that service is seldom fully appreciated unless adequately paid for, but it does seem that had the county health officer more seriously and vigorously carried on the duties of his office—educated the public in health matters—convinced them of the importance of his function and gained their respect by fearless, impartial and constant application of the rules and regulations governing his special activity, that he might now be standing in a more favorable position—on the receiving end of an adequate compensation. On the contrary, he, in most cases, has devaluated his services, and by his indifferent attitude and conduct toward health requirements, has been responsible for public disregard of his office and public health practices. It is no doubt often true that he seldom receives proper cooperation from his fellow physicians in the enforcement of health regulations, but here again is he not largely at fault?

In his defense there are several things which might be enumerated. It appears that the majority of county health officers in South Dakota are subject to the indifference and neglect of the parent organization. This is a potent factor, accounting in large measure for the present low status of the South Dakota county health officer. For proof of the statement that the county health officer is *the* "forgotten" man or "never was" we have but to look at the part he is asked to take in the present panorama of public service with its demands for emergency action and manifold public health activities, thus:

1. He is frequently ignored by his own com-

*Read at the Annual Meeting of the South Dakota Health Officers Association, Huron, S. D., November 14, 1934.

munity in the counsel and conduct of general relief measures and health work.

2. He is often completely ignored by health agencies regarding public health activities in his own county.

a. By the physicians.
b. Red Cross set-up.
c. Emergency relief administration.
d. Emergency nursing set-up.
e. State Public Health Association, and
f. Above all, by the State Board of Health.

The State Board of Health, which creates the county health officer and endows him to act in his own jurisdiction, naturally is the central governing agency. With this implied authority the county health officer should act as the right arm of his parent organization so far as his own county or district is concerned. He should be the first consideration in any local health activity or program. He should carry the responsibilities of its welfare. By virtue of his appointment to the office, he should be the person qualified to direct and assist in carrying out such activities.

Among the undesirable things in the public health organization in South Dakota is the frequent appointment of county health officers by the superintendent of the State Board of Health at the behest of the governor. One might naturally assume that such an appointment is dictated by political expediency. If such were the case, it might be smart politics to play up such appointees as often as possible in order to build up a strong political unit. The fact that this is not done is proof that the influence of such appointees is not really valued as a political asset nor is it sought by the politicians. These small appointive offices mean little to the practical politician, other than petty annoyance, and the practice of making them would probably be abandoned were it not for the fact that some physicians drag them into politics. In certain localities the few physicians aspiring to the position of county health officer get to fighting among themselves for the appointment and at election time settle by selling out to the contending candidates, and then as always, "to the victor belongs the spoils." Such tactics of attaining political preferment always invite insecurity in office, and, alas! too often they indicate total lack of fitness on the part of the appointee to assume the responsibilities of his position. Such a man does not, cannot command the respect and co-operation of his fellow physicians. They disdain and ridicule him. Sooner or later the public also loses confidence and with it respect for the important office he represents, and too often respect for the state organization of which he is a part. Obviously, politics should not have a part in the organization of those which have the safeguarding of public health any more than nepotism should enter those organizations set up to administer our educational, charitable or penal institutions. *The physicians in each community should be so organized that anything they say will gain a respectful hearing.* It should be in their province to select from among their fellows, one who is specially qualified to assume the serious responsibilities of county health officers, and such selection, backed by organized sanction, would probably receive favorable consideration from the one in whom the appointive power resides. Thus this office would be divorced from selfish office seekers and from petty politics. This office would then become truly representative of the medical profession, of whose activities it forms such an important part. A county health officer, thus appointed, should, and no doubt would, represent the best interest of the public as well as those of the medical profession. What is true regarding the appointment of the county health officer applies equally well to the office of superintendent of the State Board of Health. His preferment should be based solely upon the endorsement of organized medicine in the state. This would at once elevate the office above that of pure political aggrandizement to one which would command not only the respect of the medical profession but also that of the lay public. Understand that I do not believe nor advocate that the functions of the State Board of Health should be usurped nor its policies dictated by the organized medical profession, but the recommendation for appointment of the personnel of these offices certainly should be entrusted to the greater wisdom of the State Medical Association which alone is able to sense the responsibilities, and the true nature of such offices. As for the politicians they would be happily rid of this patronage which probably nets them only petty annoyance and grief.

Another disturbing factor in public health activities of the state, and one which is largely responsible for the poor backstage setting of the health officers, is the existence and activities of the South Dakota Health Association, a lay organization. This group deals with varied health problems, is administered by a layman with a lay directorate and is supported by public sale of Christmas Seals. No reflection is intended upon the worthiness of the motives that actuate this group, but emphasis stressed wholly on the fact that medical programs have been devised and carried out by laymen with little or no consideration and without

the expert advice of the medical profession. Of course, as always in these lay setups, the physicians are supposed to furnish the actual motive power to propel this lay-constructed machine, because otherwise it could not function, but this tacit and necessary recognition of the profession is seldom publically proclaimed. The fact that certain physicians have always participated in these health programs, though the means devised for their accomplishment were repugnant, and the further fact that the physicians for the most part failed to initiate and carry out the right kind of public health program, has helped to give rise to the present deplorable state of affairs in which the medical profession's very independence is finally and emphatically threatened. The lay director of this work, with his kind in other states, because of special training, has developed a strong organization. These men, with their special aptitude or training, or both, acquire a knowledge of social needs, social service and the ability to effect strong organizations. Their ability is recognized and when the states and nation found themselves in a grave depression, with all of the attendant evils, what was more logical than to enlist such men in the emergency set-up, with the idea of formulating and carrying out plans to meet the various exigencies, which, unfortunately, includes problems of public health and medical economics.

The indifference and passiveness of the medical profession to the activity of these lay social and public health workers is almost unbelievable and has been the chief factor in the development of the great influence these workers now possess. Certain social problems, and assuredly public health problems and those pertaining to medical economics, always should have been and should continue to be the responsibility of the medical profession. The profession's inability to recognize and assume this responsibility has resulted in the present chaotic state in which medicine now finds itself, a state from which it cannot emerge unscathed. Belated organized effort may save some of its dignity, some of the ideals of the profession, of which we have been justly proud. Medical men have not only allowed the responsibilities of their calling to slip away from them, but in many instances they have aided and abetted these lay organizations in the fulfillment of their programs, rendering service for fees so small as to be way out of proportion to the value of such service.

In South Dakota, as in many other states, child welfare movements, fostered by the State Board of Health, are conducted with funds raised by private subscription, by state appropriations and through the generosity of a paternal administration at Washington. No right-minded physician objects to the avowed purpose of such or kindred movements. The peeve of the medical profession comes from the fact that the work is so often conducted in a manner adverse to the best interests of the medical profession and to the final detriment of the movement itself. Such movements cannot attain their full objective without the wholehearted support of the medical profession, and that support will be witheld just so long as the organization and its functioning remain so largely a matter of lay control or control by medical public health agencies that so largely ignore the inherent rights of the medical profession. That all public health measures, in which the private physician is called upon to assist, should be in keeping with the ideals and best interest of that profession, is self-evident. Such a desirable end can only be attained by organized effort. To be effective, however, organized effort should be more fully representative of the medical profession than at present obtains in South Dakota. Only about one-half of the medical men of this state are members of the state association. Furthermore, the officers of the State Medical Association have, on various occasions, made the mistake of playing petty politics, apparently overlooking the larger issues which for years have been obvious to many individuals of this organization. In recent years we have, for instance, witnessed the purile attempts of some of the officers of this organization to forward the personal ambitions of one of their members, thus creating factions in its ranks, and this at a time when the individed interest of the Association should have been directed toward the solution of the gravest problems it has ever confronted. Be it understood that in this matter no personal animus actuates me. Its importance transcends personal prejudice. The medical profession cannot get very far in the satisfactory solution of its problems as it affects the profession and society at large, *until they present a united front;* until they unanimously work to maintain the ideals which have been so important in the great development of medicine; until individual dislikes, professional jealousies and personal greed are relegated to the background. Only in this way can they again assume their rightful place in society. They must, by individual and group action, demonstrate to society at large that they will support any forward-looking program which has to do with the betterment of public health and like social problems providing, of course, that their programs be formulated in such a way that the profession's inalienable right to

direct and control all machinery designed for the betterment of health conditions, is not lost or ignored.

The recent appointment of the superintendent of the State Board of Health as director of the Emergency Medical Relief of South Dakota, and as director of the Public Health Committee of the State Planning Board is a logical choice because of his constant contact with various agencies of state government, his knowledge of inside technique and of the health needs and present status of the medical profession. The health officers of the state and organized medicine should put forth every effort to co-operate with the superintendent of the State Board of Health. Only in this way can the medical profession hope to have things shape up into a unit of strength; only in this way will the county health officer receive proper recognition, and only in this way can the medical profession assume its rightful place in those activities from which it so long has been more or less completely estranged.

Conclusions

1. The county health officer is the original "forgotten man."

2. Health officers and their brother physicians are largely to blame for this because of their indifference and neglect of public health matters.

3. In some instances the office of county health officer has been a matter of political preferment. This is apparently due to the selfishness and shortsightedness of physicians in certain localities.

4. This preferment should rest solely on the basis of appointments made by the superintendent of the State Board of Health upon the recommendation of the District Medical Society.

5. The appointment of the superintendent of the State Board of Health should be made upon the recommendation of the South Dakota State Medical Association.

6. No physician should accept appointment or undertake any public program without the endorsement of his society.

7. There should be a much closer co-operation between organized medicine and the State Board of Health. The profession should act only in an advisory capacity.

8. To wield power commensurate with the needs of the situation the medical profession should be more thoroughly organized; if possible to the extent of 100 per cent.

9. It is suggested that the State Association of County Health Officers offer resolutions at this meeting to be sent to the Medical Relations Committee of the State Medical Association, drawing attention to the neglected potential power for good embodied in the office of county health officer, and seek through this committee a more definite, active, and complete relationship between the State Medical Association and the State Association of County Health Officers with the hope of more complete integration of interests which naturally have a common basis. Only in this way can an objective commensurate with the interests and ideals of medicine be conserved; only in this way will society be rewarded with the best that medicine has to offer.

The Psychiatric Approacb to the Problem of Homosexuality*

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THE time allotted for this important problem is so short that I could not possibly prepare a paper on the subject; I, therefore, decided to touch upon some of the high spots of the problem. In the first place, homosexuality is a very wide-spread manifestation. It is found everywhere, has always been found everywhere, and I have never found a homosexual who had a college education who did not practise homosexuality while in college, either with a room-mate, or an instructor, or a professor.

I became interested in the subject of homosexuality in 1903, when I was a first year interne in a hospital for mental diseases. In my contact with the patients, I found one man who did not seem insane. I could not quite understand why he was there, but I had already learned that a lot of people are *apparently* sane, but very crazy! So, I asked the physician-in-charge to let me look at this patient's record, and I found that the patient was not really crazy, but that he had been sent to the hospital for having sent love letters to a man. The patient explained that he had a homosexual affair with this man for over a year, and that the latter got tired of him and to get rid of him gave these love letters to the District Attorney, which resulted in his being adjudged insane. My knowledge of this manifestation consisted only of what I picked up in the street. I thought that anyone manifesting this peculiar behavior was a mental degenerate and I was not surprised that this person was sent to a hospital for mental diseases. But it was from that time on that the subject interested me.

I began to read about homosexuality and I soon discovered that it is very difficult for a person who knows nothing about the subject to read or in any way talk about homosexuality. There is a certain feeling of repulsion, which I did not understand at that time, which any deviation from the normal inspires in the average person. I looked for literature on the subject, but I found nothing of any value from American authors. There was nothing in this country written on homosexuality from any scientific point of view. Looking over the English, German, and French literature, I soon found the works of Krafft-Ebbing and Havelock Ellis, which described the phenomenon, but said little about the causes and treatment of the disease. As I kept on reading, I found that there were very interesting works an sexology written by various thinkers in different countries, but none really threw any light on this problem. Cases of homosexuality were reported as isolated and peculiar phenomena, some authors regarded them as monstrosities; others were more charitable, more scientific, but not until I became acquainted with Freud[1] and his works did I find anything that made the subject comprehensible. Of all the investigators, Freud is the only one who has given us something to work with. I have a great regard for the works of Havelock Ellis, Magnus Hirschfeld, Moll, Bloch and others whose valuable contributions have enriched this field, but helped little towards its solution.

This manifestation, as I said, is widespread. Hirschfeld's investigations of the male population of the city of Berlin showed that it has 0.8 to 2.2 per cent homosexuals. In 1909 I made an effort to find the percentage of homosexuals in New York City. If I had the time, I would like to tell you how interesting and amusing this investigation was, but after I worked on it for over a year with the help of a dozen intelligent homosexuals, I came to the conclusion that there are many thousands of homosexuals in New York City, but, conscientiously, I could not give any definite percentage. It is a very difficult problem to investigate, as you can readily imagine.

The one thing that I would like to stress is that homosexuality is not something *sui generis;* it affects persons from every stratum of society and every walk of life. In fact, if I should give statistics of the social status of at least 500 homosexuals, whom I have seen in my practice, I would probably say that most of them came from the best sort of environments. If I had the time, I could give you the psychological reasons for such an occurrence. Moreover, the homosexual, male or female, is not a degenerate, or a mental defective. Homosexuality is not a sign of insanity or of any mental deficiency, all popular opinion to the contrary notwithstanding. Nor is it a sign of mental superiority, as some homosexual spokes-

*Given before the American Student Health Association, Fifteenth Annual Meeting, Hotel Pennsylvania, New York, December 28, 1934.

men wish us to believe. Some of these writers wish us to believe that there is not a person in this world who did anything worthwhile in life, who was not a homosexual. There is no doubt, however, that some of the greatest minds of the past and present belong to this type of sexual reaction. Moll, who investigated this subject, wrote a book on *Berühmte Homosexuelle,* famous homosexuals. Both of these extreme views are wrong. What is true, however, is that *every mentally abnormal person shows also an abnormal sex life, but an abnormal sexuality does not stamp its bearer as mentally abnormal.* The homosexual may be a highly endowed person, and perfectly well in every way, but his sex life is abnormal, it is inverted, turned around; instead of gravitating to the opposite sex (heterosexuality) he craves a person of his own sex.

The question has been discussed from the beginning whether homosexuality is congential or constitutional, or is it acquired? If I should have the time to go into all these theories, you would probably find them interesting, but the whole thing is theoretical. There is no doubt that if we examine the various types of homosexuals, we find manifestations that seem to favor both views. The average person who thinks of a male homosexual has in mind the so-called "fairy" type of individual, and in the case of Lesbians, he invariably has in mind the masculine, virago type of female. Now, that is of course far from the truth. The so-called fairy type is simply a badly-put-together, a poorly constructed, dysglandular type of individual, who need not necessarily be homosexual. I have seen a large number of this type who were perfectly normal—that is, heterosexual. It all depends on the environment they happen to be in. To be sure, the stream of libido does not run in them as deeply and forcefully as it does in the normal. As a class, they show an executive weakness in their sexuality, and consequently their libido can easily be deflected to any path, normal or abnormal. I have seen among them normals who were happily married and had nice children, but I have seen among them homosexuals and masochists as well as other perversions. Among the homosexuals I have met were some of the most virile, "he-man" types, whom no layman would suspect of being inverted. Homosexuals may be active or passive personalities; it depends on the personalities they happen to encounter. The same may be said of Lesbians or female homosexuals. Not every masculine female is a Lesbian. I have many Lesbians, but it is more difficult to study the problem among women. A number of Lesbians have been co-operating with me, and judging by their statements, their rendezvous, etc., in New York City, although it is very difficult to find specific things as you do in men, I feel that there are almost as many Lesbians as there are male homosexuals.

I mention the fact that I have seen over 500 homosexuals, that was the record of about four or five years ago; I have seen many more since then. Most of them consulted me many years ago, after I read a paper on the subject before the American Medical Association.[2] Instigated by a number of intelligent homosexuals who felt that the physician should know something about the problem in order that homosexuals should receive more scientific and more humane consideration, I finally decided to bring this problem before physicians. From that time on, I have been a sort of a mark for homos. The great majority did not come for treatment; some of them wished to correspond with me about various questions, some wanted to discuss their problems, which were mostly blackmail and other annoyances, to which the average homosexual is frequently subjected. Some of the problems are very interesting from a sociological side. Thus, a Lesbian student discovered a homosexual man in one of our universities. They soon became very friendly, were very congenial and had many common interests. They wished to know whether they should get married and have children. With a little fantasying, sexual intercourse was possible. Despite their contentment with their abnormal sexuality, they did not want their offspring to be sexually abnormal. That was about 17 years ago, and I can report to you that they have been happily married since then, and have two normal children. Such, and similar problems often come to my notice.

Only very few seek treatment with the idea of becoming sexually normal; they are always neurotics who are either not satisfied with their homosexuality or have deep conflicts about it. Only the latter can be cured. A great many of them come involuntarily. Thus, a young man was recently brought to me by his father, who discovered that his son was a homosexual. The father was very excited over the situation; he said that he would rather see his son dead than a degenerate. The son was perfectly willing to be cured—at least he so assured his father, but when I was alone with him, he admitted that he was perfectly satisfied with his inversion, and that he was trying to placate his heartbroken father. The only thing that one can do in such cases is to endeavor to get the father to look upon the situation in a more broad-minded manner. You cannot do anything for such people; they do not wish to be cured, so it is

simply a waste of time and money; they always remain the same.

Of those who really wish to be changed, who have always struggled against this abnormal impulse, the majority can be cured. I have on record a number of such cured cases, who have been normal for many years. Thus, a man of 41 came to me about 18 years ago, and he has been perfectly well ever since. He has been married for 15 years and has three nice children. I can repeat many similar cases. But I am convinced that should such persons be deprived of normal sex outlets, they could readily return to homosexuality, for we must remember that even so-called normals, when the sexes are segregated, as in armies, navies, schools, convents, monasteries and prisons, resort to homosexuality.

To have some homosexual experiences does not constitute homosexuality in the narrow sense; a homosexual act in itself does not stamp one as a homosexual. There is hardly a man or a woman who does not start his sex activities with some person of his own sex. Both sexes often begin their sexual activity by masturbating together, and frequently enough they resort to other sexual acts. As a rule, however, they give up the homosexuality as soon as they are able to get a heterosexual outlet. I have seen quite a number of college girls, who were madly in love with classmates or teachers; I have a diary kept by two college girls in love with each other, which expresses the finest sentiments of sexual love I ever read. Both of them were able to give up homosexuality as soon as they were separated and have been perfectly normal since. But, while in college their love was discovered, and they were both put out. Fortunately, the harm thus done was corrected by proper treatment. All they needed was to be put in normal, healthy society, where they could meet men. Both of them have lived normal lives ever since. I have advocated for many years that young women in boarding schools should be offered an opportunity to meet persons of the opposite sex. For segregation of the sexes invariably produces homosexuality among animals. The sexual instinct, if not given normal expression, will invariably deviate into some abnormal channel.

Freud does not consider any deviations from the object or from the aim as distinctly foreign to the individual; everybody brings along into life germs of both normal and abnormal sexuality. For what is abnormal sexuality? What is a perversion or an inversion? A perversion is a deviation from the aim, i.e., from the sexual act, while an inversion is a deviation from the object, i.e., instead of a heterosexual object one desires a homosexual object. Now, a perversion means a centering of libido on one of the partial impulses or components of sex. Thus, a certain amount of looking, exhibitionism, touching, or tasting is normal and leads to the end-aim, the sexual act, but if one rejects the genital activity and desires only touching or exhibitionism, etc., he suffers from a perversion. To want an object of the opposite sex is normal, but to crave an object of the same sex for love and sensuous outlet is an inversion. But, both perversions and inversions have their normal roots.

Everyone must have a homosexual component. It is the component which allows us to get along and form friendships with people of our own sex. It is not only normal, but very desirable to have the proper adjustment to one's sex. But, if it becomes accentuated through something or other in any person, he is then incapable of getting along with people of the same sex. Such people are not diagnosed as homosexuals, but they suffer from a disturbance in their homosexual component. Thus, a young man consulted me because he was always in some difficulty with men around him; he was unable to adjust himself to people of his own sex. His male associates forever teased him or insulted him. Investigation showed that he always wanted more than they could give him, or he was unable to give them what they required. There was nothing sensuous about it as far as anyone could see, yet he was suffering from a bad homosexual adjustment. I cured him, so that he is now able to get along well with his associates. Such disturbances, if aggravated, not seldom lead to bad mental states, such as paranoia. This chronic form of mental disease manifests itself in delusions of persecution and grandeur. The remarkable thing is that the persecutor is always one of the patient's friends, usually his best friend. Sometimes it is one's own father or some substitute for the father.[3] But, we know that such people have always been, sexually speaking, persons of the highest type. Their history will show that as a rule they never sought the company of women, they were always of the high moral type. In other words, for reasons that I cannot enter into here, they were unable to live through their heterosexual existence. When you delve deeply into their lives, you find that they became a paranoid because the person whom they now consider their arch persecutor they formerly loved, but when that feeling began to obtrude itself into consciousness, they repressed it and then changed it into a delusion of persecution. In other words, here is a common disease, paranoia, which, up to the advent of Freud, we have never understood.

He showed us that the paranoid delusion of persecution is a reaction to a repressed homosexual wish-fantasy. Here again, the homosexuality first dealt with a so-called normal relationship between people of the same sex. Overt or pathological homosexuality is thus an expression of the fact that the individual sexualizes the normal homosexual component, while paranoia consists of a desexualization of the whole erotic component.

It would be proper to enter into the causes of overt homosexuality, but as the time does not permit it, I must refer you to my works on the subject. I wish to speak, however, of one factor. We have found that a lot of homosexuals either since early childhood had no fathers or had very weak fathers, "hen-pecked" husbands. We maintain with Freud that the boy's adjustment to normal depends on his early adjustment to both father and mother. Early in life the boy identifies himself with his father, he absorbs him, so to speak, into himself, as if to say, "I am father. I am as big and strong as he is." Later, homosexuals usually identify themselves with their mothers. They remain "fixed" or loyal to their mothers, and they, therefore, cannot select a mate in accordance with their mother's image. They, therefore, select by their own image and wish to love that object, as their mother loved them.

Endocrinologists for a number of years have been trying to tell us that people could be changed by glandular injections, gland grafting; I refer you to the works of Steinach and others. As far as I know, nothing has been accomplished as regards homosexuality. I am hoping to hear something about this from Dr. Kurzroc. I have seen a number of people who had been treated both here and abroad by these methods. No results were obtained as far as I could discover. The whole subject is still very nebulous, and I do not know when we can hope to get anything definite about it. It naturally would be a wonderful discovery for those who wish to be changed in a hurry.

In closing I wish to state that you cannot do anything with homosexuals whom you might meet in colleges. If they wish help, they will look for it themselves. I would pay no attention to the problem because no homosexual can make a normal person into a homosexual. Those who submit to it have been predisposed to it, in the first place, by constitution and environment. But we must expect that homosexuals should control their impulses as well as the heterosexual. Sensible homosexuals always behave themselves properly. There is no danger of a homosexual infecting a lot of people in a college and making homosexuals out of them. The worst thing that can happen is a scandal and an annoyance to the faculty. We should assume a sympathetic attitude towards the problem. If homosexuality is discovered, an effort should naturally be made to help the individual to rid himself of it. Disgracing such a person does not help. I have had students from perhaps every college in the East, and some in the West, who have been told to leave college on account of homosexuality. Some of them were fortunate enough to be cured and are now leading healthy and profitable lives. Some were made neurotic and some were driven to suicide. Left to themselves, homosexuals as a class usually control their impulses and give us no trouble. We expect every normal person to control his sex impulse and we must ask the same of homosexuals. Aside from this, I do not think that they should be molested. They should be allowed to follow their own existence, and very often you will find that some of them will turn out to be persons of the highest types, who will contribute much to the understanding and welfare of mankind.

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BOOK NOTICE

DAVIS BROUGHT UP-TO-DATE

Applied Anatomy, by the late Gwilym G. Davis, M.D., Professor of Orthopedic Surgery and Associate Professor of Applied Anatomy in the University of Pennsylvania; 9th edition, cloth, 717 pages; Philadelphia: The J. B. Lippincott Company: 1934. Price, $9.00.

There is but little need for, and indeed, probably no possibility of, original criticism of this famous old anatomy text, for it has been one of the standard authoritative favorites of both the medical student and the practitioner since its first edition in 1910.

Any work which has retained its value over a period of 24 years must solicit comment, therefore, from the revisions which have been made in its text and illustrations as each new edition is presented. The 1934 edition of Davis' *Applied Anatomy* is a case in point.

Primarily intended by Professor Davis as a guide for the principles of surgery as indicated through the relationship of anatomy, *Applied Anatomy* in this latest edition, has not deviated from that aim. Previous revisions had been made chiefly in the form of inserted material, thereby implying, in some measure, a disruption in continuity and cohesion. But in publishing the ninth edition of this work, the publishers granted a complete resetting of the volume, so that revision was

greatly liberalized. The revising contributors made the most of the publisher's liberality.

The sections on the brain and spinal cord were rewritten by Bernard J. Alpers, M. D., assistant professor of neurology in the University of Pennsylvania Graduate School of Medicine. The section on gynecology was revised by Robert A. Kimbrough, M. D., associate in gynecology and obstetrics; the section on urology by Stirling W. Moorhead, assistant professor of urology; the chapters on the abdomen by I. S. Radvin, M. D., professor of surgical research; these commentators being of the faculty of the University of Pennsylvania. S. Dana Wheeler, M. D., surgeon to the Germantown Hospital, revised the original work of Professor Davis on orthopedic surgery; and the general editor of the text was George P. Muller, M. D., professor of clinical surgery, University of Pennsylvania Graduate School of Medicine.

Especially notable is the beautiful color-work in the illustrations, particularly evident on pages 96 and 514.

A NEW EDITION OF BELL'S PATHOLOGY

A Text-Book of Pathology, by E. T. BELL, M.D.; second edition, octavo, 767 pages, 364 engravings and two colored plates, cloth; Philadelphia: Lea & Febiger: 1934. Price, $8.50.

This volume, now completely revised and enlarged, is a concrete example of the University of Minnesota's gradual rise in prominence as one of the finest medical schools in the country. This book, which never was the work of Professor Bell alone (as the title might indicate), is presented for the second time. Its contributors are B. J. Clawson, M.D., professor of pathology; Hal Downey, Ph.D., professor of hematology; J. S. McCartney, M.D., assistant professor of pathology; and C. J. Watson, M.D., instructor in medicine; all of the University of Minnesota School of Medicine.

A good job has been done in the revision. There is a great amount of entirely new material, such as, for example, a whole new chapter on diseases of the bones and joints. References have been extended and brought up-to-date. Many of the photographic illustrations are new.

A particularly interesting chapter is the first, called "Predisposition to Disease." The chapter on "Diseases of the Ductless Glands" contains much new material, and the section on "Neuropathology" is admirably treated.

The work itself can be recommended to any physician whose interest in pathology is keen. It is a sound piece of work, already on its way toward becoming a standard authority in the field.

NURSING TECHNIQUE

A Textbook of Nursing Technique, by MARION L. VANNIER, R.N., and BARBARA A. THOMPSON, R.N., B.S.; second revised edition, cloth, 265 pages; The University of Minnesota Press: Minneapolis: 1935. Price, $2.50.

Any text devoted to nursing in these days must be notable chiefly for its breadth of inclusion, since the material for the field is abundant for anyone who will collect it. The authors, who were formerly associated with the University of Minnesota School of Nursing and the University Hospital, have placed their faith in rigid, logical organization, and inclusion of such new material as seemed important to them.

Chapter organization, thus, begins with the elements of sanitation, proceeds through the care and comfort of the patient to the observation of cardinal symptoms, local applications of heat and cold, until it reaches the administration of medicines.

From this point, it goes into advanced procedure, such as eye, ear, nose and throat treatments, catheterization, gastric expressions and irrigations, and precautions to be taken in the hospital against communicable diseases.

The book itself is sound but uninspired. It is essentially a textbook, its prime virtue being the fact that it is new and revised. Its material is the result of gradual accretion of generally accepted treatment and management, rather than the work of the authors themselves. The volume would make a good guide for beginning nurses, as no doubt its authors intended.

A TREATISE ON PLASTIC SURGERY

Sculpture in the Living, by JACQUES W. MALINIAK, M.D.; first edition, cloth, 203 pages, illustrated: New York: Romaine Pierson: 1934. Price, $3.00.

Jacques W. Maliniak, who took his degree in medicine from the University of Paris in 1914, is now attending plastic and reconstructive surgeon at Sydenham Hospital in New York City, and several other institutions. His book is not in any sense a textbook on the subject; in fact, at times the content seems to have been prepared for the laity. What illustrations it contains are good, and the viewpoint of the author, which is restrained optimism divorced from undue enthusiasm, is sound. He deplores the taint of quackery which hovers over the art of plastic surgery as a result of beauty operations, excessive publicity, and bunglesome jobs in the hands of incompetents. He condemns in firm tones such imbecilic procedures as paraffine injections and "face-lifting" operations which amount to no more than a couple of incisions and a row of stitches.

The work has a foreword by Wendell C. Phillips, M.D., president of the American Medical Association in 1926. Although it is not an extensive treatment of the subject, the book may be read with profit by any physician.

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THE DOCTOR'S RESPONSIBILITY

Every conscientious physician experiences self-searching moments when he feels a deplorable inadequacy to cope with disease.

The futility of human endeavor in a crisis is poignantly brought to his sensitive soul when with all his resources exhausted he must finally capitulate and admit defeat. The fact that he is treating a friend or stranger may be a factor but the disappointment differs only in degree. His training and experience have so imbued him with the sacredness of life that every exodus is a grievous calamity not lightly cast off. That eventually all must go, is but an empty consolation. Was my knowledge of medical science up-to-date and my technique correct, is the burning question that no one can evade.

There is no care-free escape from responsibility in the practice of medicine. It calls for a lion's heart, brave but not hard; a woman's hand, gentle but not weak, and a calm exterior. Rare qualities these, rare to have and more difficult to acquire.

A. E. H.

FACEMASKS MORNING, NOON AND NIGHT

To the physician manipulating his morning grapefruit, the thought must often occur that here is a fertile field for the facemask inventor to apply his further ingenuity. Etiquette prescribes that the napkin shall lie, half unfolded if you please, on the lap where it can serve but one purpose: that of a repository for fallen crumbs and ricocheted particles that have missed their intended destination. Grapefruit does not ricochet, it spatters. It squirts, splashes and splatters in so many different and ever changing directions that it bewilders the most experienced machine-gun observer.

When he attends a luncheon meeting of his medical society, the chances are that he hears a discourse on oral hygiene accompanied by charts illustrating the many pathogenic substances found in the average mouth. He listens with proper scientific interest to reports of plate-culture studies at various distances, both vertical and horizontal; at angles of incidence, deflection and reflection but always measured from the mouth of some member of the *genus homo* in the act of vocalization. The germ conscious doctor, impressed with life's many foes, resolves to keep his mouth shut in the presence of possible receptors and participate in "a smile" at the cocktail hour to disinfect the aforementioned organ and fumigate its accessory and associated respiratory tract before he dresses for dinner.

In the evening he finds that his thoughtful hostess has provided two charming angels to entertain him while he eats—one on the left, an under-developed *"ren mobilis"* neurotic, and one on the right, an over-exposed obese, but both

enthusiastic and experienced specialists in medical conversation. The first tells of her many years of surgical perambulations and the second vivaciously opens up on the subject of diet. Bilateral interest and good breeding call for a lively rotation of the head in imitation of Ericsson's "cheese box" during a bombardment. Preference is conceded for the fair right, making the exchange of explosives more numerous with the Merrimack whose catapultings have the reinforced advantage of a generous commissary. While the bridge tables are being arranged the doctor recalls an old game called "truth and consequences" as he reverts again to a speculation on facemasks and infectious disseminations.

A. E. H.

MEDICAL INSURANCE—WAGNER BILL

It is quite evident that the term "socialized medicine" is a red flag to a great majority of the physicians of this country. The Wagner Bill on social insurance now before the Senate is displeasing to the physicians of America, for the medical profession fears hasty action and the setting up of some scheme which, once established, will rise, like the old man of the sea, on the back of medical progress and impede its advancement.

If the governmental agencies will keep hands off, the medical profession will work out the problem along lines based on American ideals. Except as has hitherto been provided for by Boards of Health and United States Public Health Service, any attempt to encourage the lay population of this country in the belief that the care of its health is largely the function and responsibility of the government, is pernicious, dangerous and destructive to progress.

Under the shield of philanthropy, sociologists are propagandizing remedies and also, prosperity for the underpaid physician, by compelling all the people in the lower income classes to submit to grouping into panels for which medical service shall be provided at low cost, under governmental control. Schemes are so planned that everyone will have a physician, regardless of his personal desire.

The propagandists say that there must be "Executives to set up and administer the scheme. ...Professional agencies to care for the problems of education and investigation, and to administer the professional service," and a "judicial agency combining lay and professional members to deal with complaints and grievances," erecting bureau upon bureau.

In every country having such a system, the administrations of insurance have developed into powerful political machines. When benefits are distributed to individuals through an extensive administrative machinery with many employees, the whole scheme tends to become a gigantic political machine. This always has evil effects on the quality of the medical service. Patients are not able to judge the quality of medical service. They prefer free drugs to thorough diagnosis, and the politicians will give them what they want without regard to the effect on their health. This has been the tendency in nearly every system of sickness insurance.

Medical service, unlike cash or material commodities, cannot be collected, stored and distributed without changing its qualities. Its value depends on the relations between the producer (the physician) and the consumer (the patient). Its distribution is a part of the service. The introduction of a third party who is neither physician nor patient is equivalent to adulteration of the service.

Since insurance administration is controlled by cash considerations, quantity, rather than quality, of medical service is stressed. The essentials of a good diagnosis are time, patience, careful attention to details and sympathetic relations between a skilled practitioner and cooperating patient. Insurance compels haste and tends to create antagonism between patient and physician. By removal of the essentials mentioned, insurance delivers little more than the dregs of of a real diagnosis.

Compulsory health insurance to replace contract practice might be a step forward, but, in the United States, where most of the physicians are "on their own," compulsory health insurance would be a backward step from independent service, however poorly paid, to dead levels of governmental servitude.

It is said in this connection that "neither their hands, nor their instruments, need be tied." When workmen's compensation laws cease to fetter the physicians' hands, then it may become timely to attempt another experiment evolved from current painful experiences.

Compulsory health insurance abroad involves regimentation. It has not improved the public health. It can not provide reasonable compensation because of the inevitable administrative costs. Political tendencies are unavoidable.

The scientific exhibit of the American Medical Association at Cleveland was an amazing demonstration of the accomplishments of American physicians. Study of the individual by the individual has carried medicine to so high a place

in public service that it may readily be believed that there is little need for mass medicine.

Even the most enthusiastic advocates of insurance admit that sickness insurance has done little to develop or encourage measures for the prevention of disease. Individual immunization, regular health examinations, and measures for the detection and treatment of incipient disease are, in all insurance countries, largely dependent on other agencies than insurance. The insurance practitioner is too hurried and is held too closely by restrictions imposed by administrators to give much attention to preventive work. Such preventive work is more extensive, reaches a larger percentage of the population and is better supported by the general public and the medical profession in the United States than in countries having compulsory sickness insurance.

The progress of medical science has been marked in every modern nation by a more rapid decline in mortality during the last half century than in any of the preceding centuries. The application of the triumphs of surgery, epidemiology, immunization and the advances in diagnosis and treatment in a multitude of directions has added a score of years to the average life. Where these advances in medical science have been utilized in public health work and private practice it is possible to demonstrate statistically their effect in reducing the death rate. But the advocates of insurance have not been able to show a similar statistical connection between the introduction or extension of insurance and a decline in the death rate.

The source of this desire to nationalize medicine is not the medical profession. Its members have not sought this process of regimentation. The profession will not be regimented if each member will do that which he rather passively hopes will be done for him by others; take steps to arouse public opinion, each in his own circle of contacts. The very confidence which the individual physician arouses in his patients, will, in the aggregate, prove the greatest menace to this insidious propaganda. In addition to individual effort, organized medicine has a potential influence sufficient to drive its opponents to cover. Whatever may be the outcome of this campaign, the result will be chargeable to the profession; its defeat, to co-operative intelligent activity; its establishment, to a greater or lesser passivity. The responsibility is direct; the challenge clear. The medical profession must solve medical problems; it alone has the intimate knowledge which can furnish an intelligent and happy solution.

Members of the medical profession demand the right to fail or succeed by their own individual efforts. The medical man is an individualist. The contributions made to medical science have been largely the result of an individual's courage to think and act independently.

S. M. H.

SOCIETIES

OFFICIAL CALL

To the Officers, Councilors, Delegates and Members of the South Dakota State Medical Association:

The Fifty-fourth Annual Session of the South Dakota State Medical Association will be held in Pierre, South Dakota, from Monday, May the thirteenth, to Wednesday, May the fifteenth, Nineteen Hundred and Thirty-five.

The Council will convene on Monday, May the thirteenth, at 4:00 P. M.

The House of Delegates will convene on Monday, May the thirteenth, at 7:00 P. M.

The Scientific program will open on Tuesday, May the fourteenth, at 8:30 A. M.

Second meeting of the House of Delegates, Wednesday, May the fifteenth, at 7:00 A. M. breakfast.

Second meeting of the Council, Wednesday, May the fifteenth, at 12:30 P. M. luncheon.

W. G. Magee, M.D., *President,*
H. R. Kenaston, M.D., *Chairman Council.*

ATTEST:
J. F. D. Cook, *Sec.-Treas.*

TENTATIVE PROGRAM

SOUTH DAKOTA STATE MEDICAL ASSOCIATION

PIERRE, S. D., MAY 13-15, 1935

Headquarters: St. Charles Hotel

Scientific Sessions: Masonic Temple

Monday, May 13, 1935

2:00 P. M. First Meeting of Council.
7:00 P. M. First Meeting of House of Delegates.

SCIENTIFIC SESSIONS

Tuesday, May 14, 1935

8:45-10:15 A. M. Clinic "Cardiac."
C. B. Wright, M.D., Trustee A. M. A., Assoc. Prof. of Medicine, Univ. of Minn. Medical School, Minneapolis.
Intermission (15 Minutes)

10:30-12:00 Clinic "Chest."
Chester Arthur Stewart, M.D., Assoc. Prof. Ped., Univ. of Minn. Medical School, Minneapolis.
Noon Recess (Alumni Luncheons)

2:00-6:00 P. M. Presidental Address—W. G. Magee, M.D., Watertown.

Paper—C. B. Wright, M.D.

Paper—Chester A. Stewart, M.D.

Paper—W. A. Fansler, M.D., Assoc. Prof. Surg., U. of Minn. Med. School, Minneapolis.

Paper—Henry F. Vaughan, D.Ph., Commissioner of Health, Detroit, Mich.

Paper—Radiologist to be supplied by A. A. McLaurin, M.D.

6:30 P. M. Annual Dinner.

Wednesday, May 15, 1935

7:00 A. M. House of Delegates' Breakfast.

8:00-9:00 A. M. Clinic "Poliomyelitis."
Carl C. Chatterton, M.D., Asst. Prof. Orth. Surg., Univ. of Minn. Medical School, St. Paul.

9:00-10:30 A. M. Clinic "Diabetic."
R. M. Wilder, M.D., Prof. Medicine, Univ. of Minn. School of Medicine, Rochester.

INTERMISSION (15 Minutes)

10:45 A. M.-12:15 P. M. Clinic "Pediatric."
R. L. J. Kennedy, M.D., Rochester.

NOON

2:00 P. M. Address: President-elect A. S. Rider, M.D., Flandreau.

Paper—R. M. Wilder, M.D., Rochester.

Paper—R. L. J. Kennedy, M.D., Rochester.

Paper—E. R. Serles, Ph.G., Dean S. D. School of Pharmacy, Brookings.

Paper—C. C. Chatterton, M.D., St. Paul.

TENTATIVE PROGRAM

SOUTH DAKOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

PIERRE, S. D., May 14, 1935

10:00 A. M. "Laboratory Aids in the Diseases of the Ear, Nose and Throat."
Paul G. Bunker, M.D., Aberdeen, S. D.

11:00 A. M. "Presentation of Some Clinical Cases."
C. E. Robbins, M.D., Pierre, S. D.

1:00 P. M. Business Meeting.

2:00 P. M. "Blood Stream Infection Associated With Suppurative Diseases of the Ear."
H. I. Lillie, M.D., Rochester.

3:00 P. M. "The Radical Mastoid Operation."
J. F. Curtin, M.D., Minneapolis.

4:00 P. M. "Chronic Dacryocystitis and Its Surgical Management."
Wm. H. Stokes, M.D., Omaha, Nebr.

NORTH DAKOTA STATE MEDICAL ASSOCIATION

Minot, N. D.

Sunday, May 26

2:00 P. M.—
Golf—Minot Country Club.

8:30 P. M.—
House of Delegates—Masonic Temple.

Monday, May 27

10:00 A. M.—
House of Delegates—Masonic Temple.

2:00 P. M.—
House of Delegates—Masonic Temple.
Registration—Masonic Temple.

6:15 P. M.—
Opening Session of North Dakota State Medical Association—(At Episcopal Church. State Society guests of Minot physicians.)
Presidential Address—Dr. E. C. Stackhouse.
Report of House of Delegates.
Report of Chairman of Entertainment Committee.
"Legislative High Lights"—Dr. L. W. Larson.
"Medical Economics"—Dr. H. A. Brandes.
"Experimental Studies on the Etiology of Gastric and Duodenal Ulcer"—Dr. Lester Dragstedt, M.D., F.A.C.S., Associate Professor of Surgery, University of Chicago.

Tuesday, May 28

9:00-9:45 A. M.—
"Surgery of the Gastro-Intestinal Tract"—Dr. D. C. Balfour, M.D., F.A.C.S., Mayo Clinic, Professor of Surgery, Graduate School, University of Minnesota.

9:45-10:30 A. M.—
"A Clinical Evaluation of Collapse Therapy Measures in the Treatment of Pulmonary Tuberculosis"—Dr. Thomas J. Kinsella, M.D., F.A.C.S., Assistant Professor of Surgery, University of Minnesota, Surgeon Glen Lake Sanatorium, Oak Terrace, Minn.

10:30-11:15 A. M.—
"Diagnosis of Acute Appendicitis in Childhood"—Dr. Henry F. Helmholz, M.D., Mayo Clinic, Professor of Pediatrics, Graduate School of University of Minnesota.

11:15 A. M.-12:00 M.—
"Head Injuries from a Neurological Standpoint"—Dr. William H. Hengstler, M.D., St. Paul, Assistant Professor of Neurology, University of Minnesota.

2:00-2:45 P. M.—
"Established Values in the Specific and Non-Specific Treatment of Syphilis"—Dr. Paul O'Leary, M.D., Mayo Clinic, Professor of Dermatology and Syphilology, Graduate School, University of Minnesota.

2:45-3:30 P. M.—

"The Emergency Treatment of Fractures"—Dr. R. C. Webb, M.D., F.A.C.S., Minneapolis, Chief Surgeon, Great Northern Railroad. Member of Fracture Committee of the American College of Surgeons.

3:30-4:15 P. M.—

"Complications of Pregnancy"—Dr. J. A. Urner, M.D., F.A.C.S., Chief of the Department of Obstetrics and Gynecology, Minneapolis General Hospital. Associate Professor of Obstetrics and Gynecology, University of Minnesota.

4:15-5:00 P. M.—

"Granulopenia"—Dr. William A. O'Brien, M.D., Pathologist, University of Minnesota Hospital, Associate Professor of Pathology, University of Minnesota.

8:00 P. M.—

Annual Banquet—Minot Country Club.

Monday, May 27

12:00 Noon—

Meeting of the North Dakota Academy of Ophthalmology and Oto-laryngology (meeting place announced later).

Meeting of the North Dakota Public Health Association (meeting place announced later).

C. E. Stackhouse, M.D., *President.*
A. W. Skelsey, M.D., *Secretary.*

HOBBY SHOW PLANNED FOR MINNESOTA CONVENTION

The doctor with a hobby whether he be numismatist, philatelist, toxophilite, or what not, is going to have his great opportunity to display his forte at the annual convention of the Minnesota State Medical Association. The Minneapolis Committee on arrangements has decided to innovate a hobby show and an invitation is being broadcast to all true avocationists to display their wares.

Any Minnesota member interested in exhibiting his hobby is urged to notify Dr. F. A. Olson, 420 Syndicate Building, Minneapolis, or Dr. J. K. Anderson, 1829 Medical Arts Building, Minneapolis. The exhibition will be arranged in a commodious room on the second floor of the Minneapolis Auditorium.

The list of exhibitors to date includes: Minneapolis—Dr. Kenneth Bulkley, big game trophies; Dr. J. F. Corbett, antique fire arms; Dr. Paul F. Dwan, fire arms; Dr. E. L. Gardner, photography; Dr. James S. McCartney, trout and bass flies; Dr. F. H. K. Schaaf, big game trophies; Dr. W. D. White, photography; Dr. H. M. N. Wynne, trout and bass flies; R. E. Scammon, books; Dr. D. M. Siperstein, books; Dr. Wm. R. King, flies. St. Paul—Dr. E. L. Warren, big game trophies and fire arms. Rochester—Dr. J. L. Crenshaw, trout flies; Dr. W. S. Lemon, wood carving; Dr. G. B. New, pipes; Dr. L. B. Wilson, antique and modern fire arms.

Dr. F. H. K. Schaaf, chairman of the program committee, has completed arrangements for a symposium on blood diseases in which three nationally known physicians will take part. Participating as lecturers will be Dr. William P. Murphy of Harvard Medical School, 1934 Nobel prize winner in medicine; Dr. T. L. Squier of Milwaukee, Wis., and Dr. W. A. Bloedorn of the United States Public Health Service, Washington, D. C. Dr. Murphy will speak on "Liver Therapy in the Treatment of Anemia"; Dr. Squier will discuss "Agranulocytosis," and Dr. Bloedorn, "Iron Therapy."

Dr. L. W. Sauer of Chicago has been invited to give the principal address on the Tuesday program, speaking on the subject, "Whooping Cough Serum."

Acceptances to appear on the program have been received from Dr. Frank Lahey, Boston; Dr. Edmund Andrews, Chicago; Dr. Thomas G. Orr, Kansas City, and Dr. Richard Pearson Strong, professor of tropical medicine at Harvard.

Space in the exhibit hall is being taken rapidly. Sections have been reserved for the University of Minnesota, Mayo Clinic, the scientific exhibit of the American Medical Association, the Council of Physical Therapy and for the following clinicians: E. S. Platou, M.D., Minneapolis, pediatrics; F. J. Elias, M.D., Duluth, carbon monoxide poisoning; M. H. Nathanson, M.D., Minneapolis, heart exhibit; A. F. Bratrud, Minneapolis, injection treatment of hernia; R. M. Wilder, M.D., Rochester, diabetes.

A tentative list of commercial exhibitors includes the following firms:

Abbott Laboratories, North Chicago, Ill.
C. F. Anderson Co., Inc., Minneapolis.
Antioch Shoe Shop, Minneapolis.
Ayerst, McKenna & Harrison, Montreal, Quebec.
Bard-Parker Co., Inc., Danbury, Conn.
Bilhuber Knoll Corp., Jersey City, N. J.
Brown and Day, Inc., St. Paul.
Burroughs Wellcome, New York City.
Cambridge Instrument Co., New York City.
Chippewa Springs Corp., Minneapolis.
Jos. E. Dahl Co., Minneapolis.
Danielson's Medical Arts Pharmacy, Minneapolis.
DeVilbiss Co., Toledo, Ohio.
Do-More Seating Service, St. Paul.
Ford Motors, Minneapolis.
General Electric X-ray Corp., Minneapolis.

Gerber Products Division, Fremont, Mich.
Health Products Corp., Newark, N. J.
H. J. Heinz Co., Pittsburgh, Penn.
Horlick's Malted Milk Corp., Racine, Wisc.
Kellogg Company, Battle Creek, Mich.
I. Kessell Co. & Electric Therapy Products, St. Paul.
Lea & Febiger, Publishers, Philadelphia, Penn.
Lederle Laboratories, New York, N. Y.
Mead Johnson Co., Evansville, Ind.
Medical Protective of Fort Wayne, Wheaton, Ill.
Mellin's Food Co., Boston, Mass.
Merck & Company, Rahway, N. J.
Wm. S. Merrell Co., Cincinnati, Ohio.
Minneapolis Artificial Limb Co., Minneapolis.
Minnesota Medical Finance Corp., Minneapolis.
V. Mueller & Co., Chicago, Ill.
Pengelly X-ray Co., Minneapolis.
Petrolagar Laboratories, Chicago, Ill.
Physicians & Hospitals Supply Co., Minneapolis.
S. M. A. Corporation, Cleveland, Ohio.
Sharp & Smith, Chicago, Ill.
E. R. Squibb & Sons, New York City.
Twin City Optical Houses consisting of American Optical Company, N. P. Benson Optical Co., Riggs Optical Co., Twin City Optical Co., and Walman Optical Co.
Upsher Smith Co., Minneapolis.
U. S. Hospital Supply, Minneapolis.
Winthrop Chemical Co., New York City.
Donation: American Linen Co., Minneapolis.

Proceedings Minnesota Academy of Medicine

Meeting of February 13, 1935

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 13, 1935. The president, Dr. Alexander R. Hall, St. Paul, in the chair.

The meeting was called to order at 8 p. m. There were 50 members and two guests present.

Minutes of the January meeting were read and approved.

The scientific program included an address by Everett K. Geer, M.D., St. Paul, on the topic, "Oleothorax: A Report of Its Use in Twenty Cases."

The Effects of Sodium and Potassium Salts on Carbohydrate Metabolism and Blood Pressure

Irvine McQuarrie, M.D.
MINNEAPOLIS

Abstract

In the course of a preliminary inquiry concerning the cause of the excessive craving for salt which was manifested by one of our severely diabetic boys, it was incidentally discovered that he developed arterial hypertension during periods of high sodium chloride intake. Further study revealed the additional fact that the degree of glycosuria was diminished during such periods. It was, therefore, determined to make a careful investigation of these phenomena under more thoroughly controlled conditions. During the past year Dr. Thompson and I have made repeated observations on four diabetic children and on one non-diabetic control subject with similar results.

Briefly, it has been found in diabetic patients on uniform maintenance diets low in potassium and with insulin dosage adjusted at such a level as to permit a moderate degree of glycosuria throughout the day, that ingestion of from 30 to 80 grams of NaCl daily results in a significant decrease in glucose output (e.g., from 60 to 20 grams daily), and an elevation of both the systolic and diastolic blood pressure. Other sodium salts than the chloride, namely, bicarbonate and citrate, have similar but less striking effects. Potassium chloride was found to influence the blood pressure and the carbohydrate metabolism in the reverse direction, causing an increase in the degree of glycosuria and a decrease in blood pressure. Calcium and magnesium salts are also being studied.

The mechanism of those relationships is not as yet understood. That the effect of the NaCl on glucose output is not merely one of retention of glucose along with retained water is shown by the fact that the latter rarely exceeds two kilograms while the extra glucose retained over a period of one week during the high-salt intake may be as much as 350 grams. The total amount retained in the water stored during the period, if calculated on the basis of the blood sugar levels found at the time, would be no more than one per cent of the latter quantity. There is apparently not only better glycogen storage but also more rapid oxidation as indicated by the fact that the respiratory quotient tends to be higher during the high sodium chloride period. The possible relationship of the phenomena discussed to adrenal, pancreatic and pituitary functions is considered.

Discussion

Dr. R. T. LaVake, Minneapolis: The importance of experiments of this type cannot be over-

emphasized. It is to be hoped that such experiments will throw a great deal of light on the treatment of toxemias of pregnancy as a by-product. I would like to ask Dr. McQuarrie if he has experimented at all with magnesium sulphate as a neutral salt in this group of experiments. When Martin Fischer was here many years ago, he described his experiments with magnesium sulphate and since that time a great deal has been done in the use of magnesium sulphate in the toxemias of pregnancy, and apparently magnesium sulphate has a tendency to reduce the blood pressure. We put our toxemia patients on a salt-free diet with restricted fluids, a Carrel diet and use magnesium sulphate as a neutral salt.

This work of Dr. McQuarrie's is most interesting and instructive.

Dr. H. L. Ulrich, Minneapolis: I was very much interested in this discussion. I would like to see cholesterol or rather esterol studies made on these patients. Many years ago some work was done on cholesterol as a possible cause of essential hypertension. Experimentally, it has been shown cholesterol increases the irritability of the smooth muscle cells of the body.

I would like to ask Dr. McQuarrie if there was a marked weight increase in these cases?

Dr. McQuarrie: There was an increase of about two kilograms in each patient during the high-sodium chloride periods.

Dr. Ulrich: Intercellular edema can be relieved by withholding salt; intracellular edema can be modified by potassium. The Germans use a term, "das wasserhaushalt," or, literally translated, water household of the body which embraces all the water of the body and its physiology. There is a daily tide of water in our bodies amounting to 7 to 10 liters which never leave the body. The physiology of this large movement of water is not entirely clear. Recent experiments in a very accurate metabolism chamber demonstrated that the output of the kidney is controlled by the posterior pituitary. It would be very interesting to know the effects of sodium and potassium ions on the pituitary.

Dr. McQuarrie, in closing: In regard to Dr. LaVake's question, I believe that this is quite an important point of attack in eclampsia, and certainly there is water and salt retention in that condition. Also, Anselimo has shown that there is an increase of pitressin in the blood in eclampsia. I have used magnesium sulphate quite frequently in children with acute glomerular nephritis with arterial hypertension. Its beneficial effect has never been adequately explained on the basis of osmotic effect because we use so little. It is very effective. I believe now that its chief action may be on cell membrane permeability rather than on osmotic action. Potassium apparently antagonizes sodium in some as yet unknown way. Magnesium may have a similar action.

In regard to Dr. Ulrich's question about cholesterol, I can say that cholesterol is a profound narcotic when injected intravenously. Cholesterol mobilizes sodium chloride and water from the tissues into the blood stream from whence it is excreted by way of the kidneys. So one would expect, if these studies hold up, that this would fit in very nicely with what has been said in regard to the effect of cholesterol on blood pressure.

The effect of lecithin, on the other hand, is quite the reverse; it increases irritability and retention of water.

Detachment of the Retina

C. N. Spratt, M.D.
MINNEAPOLIS

Since the paper on retinal detachment by Dr. Burch was presented before this Academy, several men have asked me as to the details of the operation. I thought it might be of interest to show moving pictures, as this would convey a much better idea of the procedure than a lengthy description. This patient was struck in the right eye on Thanksgiving Day, 1934. About five weeks later he noticed a blurring of his vision. Examination disclosed a tear of the retina. This was distinctly seen and located to be 18 millimeters back from the limbus and 30 degrees above a horizontal line. The vision was slightly affected, being 20/20 minus. The operation shown is the Walker modification of the diathermy method.

The meeting adjourned.

R. T. LaVake, M.D.,
Secretary.

NEWS ITEMS

Dr. Stanley Tyler has recently opened offices for the general practice of medicine at Raymond, Minn.

Governor Berry of South Dakota has issued a proclamation, calling for May 1, to be observed as "Child's Health Day."

Dr. J. H. Rishmiller, Minneapolis, who has been spending the winter at Clearwater, Florida, will return home early next month.

Dr. Kenneth E. Stein, Prior Lake, Minn., has recently moved to Lakeville, where he will continue his general practice of medicine.

A new addition has been started on the Holman hospital at Pine River, Minn., which will increase its bed capacity nearly double its present number.

A new hospital will be erected during the coming season at Sisseton, S. D., and plans call for a 50-75 bed capacity, with all modern improvements.

Dr. R. F. Raiter, Cloquet, Minn., was the principal speaker at a conference of State and Indian service workers held at Cass Lake, last month.

Dr. E. E. Gage, Sioux Fall, has been appointed county physician of Minnehaha County and is already at work in his new office, starting on April. 1.

Dr. J. C. Litzenberg, Minneapolis, was the guest speaker at the spring conference of the Southern Clinical Society at Dallas, Texas, March 20.

Dr. A. N. Adson of the Mayo Clinic, Rochester, was the guest speaker before the members of the Southwest Clinical Society, at Kansas City, last month.

Drs. W. J. and C. H. Mayo, Rochester, have presented the city of LeSueur, Minn., with the old Dr. W. W. Mayo homestead, to be used as a public library.

Home Hospital, Slayton, Minn., has been undergoing many repairs and redecorations and with complete new furniture will be ready for opening on May 1st.

Dr. B. A. Dyar, De Smet, S. D., has been appointed to make a survey of the adult relief clients in the state as to tuberculosis and other contagious diseases.

Drs. J. L. Calene, E. A. Pittenger, and R. G. Mayer of Aberdeen, were the principal speakers at the meeting of the District Medical Society recently held at Huron, S. D.

The District Medical Society's last meeting held at Aberdeen on the evening of March 19, brought out a large attendance of members, the program centered on technical discussions of cancer.

The University of Minnesota and the Mayo Clinic physicians will conduct clinics at the eighty-second annual meeting of the Minnesota State Medical Association to be held in Minneapolis, June 24-26.

Dr. Morris Fishbein, Chicago, editor of the Journal of the American Medical Association, was the guest speaker before the members of the Hennepin County Medical Society on the evening of April 1.

Dr. F. J. Pratt, Minneapolis was on the program of the Renville County Medical Society at its March meeting held at Olivia, Minn., his subject being, "Eye, Ear, Nose and Throat Conditions in Children."

Dr. Edmund Delos Putnam, 61 years old, died at his home in Sioux Falls, S. D., April 1, of cerebral arterial sclerosis after an illness of about two years. He had been identified with the medical fraternity for 28 years.

A museum of hygiene and medicine, the only one of its kind on the continent, was opened recently in the Mayo Clinic. It is housed in a remodeled school building, the one in which Dr. C. H. Mayo received his early education.

Dr. Theodore J. Catlin, a pioneer physician of Delano, Minn., passed away last month at the advanced age of 86 years. Dr. Catlin was a graduate of Rush Medical College in 1874, and started practice the same year in Delano.

Dr. Richard P. O'Brien, Minneapolis, aged 72 years, died at his residence, following illness of six months. Dr. O'Brien was born in Illinois. He was graduated from Northwestern university, and was the first interne at St. Barnabas hospital.

Mrs. Walter J. Marclay, Minneapolis, who has just returned from Washington, entertained the members of the Womens auxillary of the Hennepin County Medical Society recently with an interesting paper on "The New Deal at Halfway."

At the March meeting of the members of the Scott-Carver County Medical Society, held at Chaska, two Minneapolis doctors were the guest speakers, Dr. C. N. Spratt presented a paper on "Eye Lesions" and Dr. R. R. Cranmer, one on "Head Injury."

Dr. Richard Olding Beard, professor emeritus of the University Medical School, was the principal speaker at the annual meeting of the Public Health Nurses Association, recently held in Minneapolis. Dr. Beard spoke on "Public Health Today and Tomorrow."

Dr. H. J. McDonald, one of the pioneer physicians of Butte, Mont., was laid to rest on March 27, following a heart attack. It was one of the largest funerals ever held in that city, as the doctor had a long list of intimate friends in that section of the state.

The annual meeting of the Northern Minnesota Medical Association will be held at Duluth

on August 12 and 13th, with Dr. M. G. Gillespie in charge of the program, which will be one of the best ever presented by the association, and will be published in full in a later issue of the Lancet.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocyles or 370.2 meters). The program for the month will be as follows: April 16, "Ear Infections"; April 23, "Hysteria"; April 30, "Prenatal Dental Care."

A large number of physicians were in attendance at a special meeting held at Wabasha, Minn., last month, with several prominent speakers on the program, among whom were: Dr. W. A. Coventry, Duluth, president of the Minnesota State Medical Association, who spoke on "Our Relations to Present and Proposed Economic Regulations."

The South Dakota State Medical Association have sponsored a Radio broadcast program over WNAX Yankton, S. D. The program is on the air each Sunday evening at 6:45 to 7:00. This program covers a year of education material. Papers are prepared by the members of District Medical Societies. The Radio broadcast committee of the state association, broadcast five papers in December 1934, introducing the program. The state association consists of twelve districts, each district society to be responsible for one month. The programs for the past four months have been well received, and with the co-operation of the medical profession of the state, they anticipate continuing the program for a period of years. The set-up consists of the State Association Broadcast Committee: S. M. Hohf, M.D., Yankton; E. W. Jones, M.D., Mitchell; E. L. Perkins, M.D., Sioux Falls, and J. F. D. Cook, M.D., secretary. The editorial board consists of the district councilors, district presidents and secretaries. This gives each District Medical Society the responsibility for the paper eminating from their respective districts. The State Committee passes on all papers. The program calls for papers at least 60 days in advance of broadcast date. Papers and back copies may be obtained by addressing the secretary J. F. D. Cook, M.D., Langford, S. D.

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New Series

The Vitamins—A Discussion of Some Aspects of Past and Present Knowledge*

Leroy S. Palmer, Ph.D.†
Minneapolis

Early History

PHILOSOPHERS from the time of Hippocrates have speculated about the nature of foods and the requirements of nutrition, but it was two thousand years after Hippocrates before any experimental inquiries were begun in this field. The honor of establishing modern methods of research in nutrition perhaps belongs to Magendie, the French physiologist and distinguished teacher of Claude Bernard. As early as 1816 Magendie reported nutrition experiments, using dogs, and these were extended to include rabbits, guinea pigs, fowls and even an ass before Megendie died in 1855 at the age of 72.

Even before Magendie's time, however, physicians appreciated the relation of certain diseases to diet as evidenced by the classic treatise on scurvy by James Lind in 1757, in which Lind not only pointed out the relation of this disease to the lack of fresh vegetables in the diet but predicted that the nutrient principle in such foods which exerts a prophylactic and curative effect for scurvy would eventually be isolated by chemical methods. This prediction shows remarkable faith in view of the crude chemistry of Lind's day; but in spite of advances in chemistry that Lind could never have imagined, 175 years elapsed before his prediction came true. Moreover, the isolation of this "nutrient principle" was followed within a few months' time by its synthesis, an accomplishment wholly beyond Lind's imagination, because synthetic organic chemistry did not begin until 71 years after Lind's treatise. In fact, the most elementary organic chemistry was only then unfolding through the work of Lavoisier, a contemporary of Lind.

The present creditable position of our knowledge of nutrition is in reality one of the great triumphs of chemistry. And the present public interest in food and nutrition has been largely the result of the discovery of the vitamins. Whether it was their novelty, their exploitation, good press-agenting or a part of the general growth of public interest in science or other related reasons, the fact remains that the discovery of the vitamins has done more to focus public attention on the importance of nutrition to every-day life and health than the pleadings of physicians to their patients could have accomplished in the course of a good many years.

Vitamin Definitions

Ten years ago an acceptable definition of a vitamin, perhaps, would have been as follows: A vitamin is an organic substance which does not belong to any of the three great classes of primary organic foods, namely: proteins, fats and carbohydrates, and is essential, in immeasurably small quantities, for the life and well being of animal organisms, most of which lack the power of vitamin synthesis.

Today any definition of a vitamin would differ

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*Prepared especially for the Pediatric Number of THE JOURNAL-LANCET.

in at least three particulars from the definition just given: (a) as to lack of identification with any of the major classes of primary organic foods; (b) as to the measurability of the quantities required, and (c) as to the ability of animal organisms to synthesize them.

A definition of a vitamin which might today be acceptable by many may be constructed from certain statements made by Sir F. G. Hopkins in his Presidential address to the British Royal Society, on September 6, 1933, his subject being "Some Chemical Aspects of Life." In keeping with Prof. Hopkins' ideas a vitamin may be defined as a substance which must be supplied in the diet or may be synthesized by the animal (in certain species), and which exerts a hormonal action in the control and coordination of events in the animal body by virtue of a specific molecular structure. In fact, Hopkins believes that a vitamin is to be classed as a hormone if it is synthesized in the body metabolism. This conception is defensible only if one does not limit the hormones entirely to the products of exclusively ductless glands, because there is as yet no evidence that vitamin synthesis occurring in animals *takes place* in the endocrine glands, although there is a possibility of this in the case of vitamin C and the adrenals. However, the liver of animals which produce vitamin C is rich in this substance.

Vitamin Terminology

The letters which have been given to designate the vitamins are primarily in the order of the discovery of their importance in general nutrition rather than in the order of their actual discovery, or at least of fairly acceptable evidence of their existence.

Six vitamins are now universally recognized: A, B, (B_1), C, D, E and G (B_2). The existence of further vitamins, catalogued as B_3, B_4, B_5 and also others such as "factor H," "factor Y," respectively, has been postulated. With the possible exception of B_4, the crucial experiment has not yet been set up which demonstrates conclusively the existence of the other alleged vitamins. There have also been suggestions of two vitamins A, two vitamins C and at least two vitamins D. Of these it must now be accepted as proven that two or more closely related substances possess therapeutic antirachitic activity.

Primary Effects of Vitamin Deficiencies

It is now generally accepted that the primary effect of vitamin A deficiency is a keratinization of the epithelium, of vitamin C deficiency is a capillary degeneration with resulting hemorrhage and that vitamin B and vitamin G deficiency, respectively, are important, and, possibly in some cases, major factors in beri-beri and pellagra. Scurvy, beri-beri and pellagra are still classed by nutrition investigators as primarily avitaminotic in etiology with recognition of the fact that clinical cases of beri-beri and pellagra are seldom uncomplicated cases of avitaminosis. Furthermore, the avitaminosis is regarded as dietary. What shall we say about rickets? Is it a dietary avitaminosis? The answer seems to be definitely in the negative. One cannot have a dietary deficiency of something that does not naturally occur in the diet in sufficient amounts to be of any significant value, at least not in the same sense that we speak of vitamin B, C and G deficiency; there are many articles of food commonly available which are rich in these vitamins. In rickets in children and in animals, the vitamin D deficiency is in the body due to insufficient exposure to the sun's rays which naturally produce the vitamin in the skin. The demonstration that this is the natural etiology of human rickets came about in logical steps, although rather widely separated in point of time. The main points seem to be as follows: In 1890, Palm showed that the geographical incidence of rickets is universally related to the abundance of sunlight. In 1913, Raczynski noted that the seasonal variations in the incidence of rickets are inversely related to the *amount* of sunlight. In 1919, Huldschinsky demonstrated the cure of rickets by means of the ultra-violet lamp. It was a logical step for Hess and Unger to show in 1921 that seasonal incidence of rickets follows inversely the ultra-violet received from the sun.

Vitamin D Synthesis

The discovery that an extremely potent antirachitic substance is formed when ergosterol is irradiated with ultra-violet rays is one of the outstanding biochemical findings of the vitamin era. Equally important was the demonstration that this provitamin D is present everywhere in foods and in an accessible region of the outer portions of the human body (likewise of many species of animals), and only requires proper activation by the potent rays of the sun or suitable lamp to be changed, in part at least, to a vitamin D. But it is still difficult to reconcile the wide distribution of ergosterol in the foods derived from plants with the insignificant distribution of vitamin D in these foods. The season of plant growth is the season of maximum incidence of ultra-violet from the sun which readily cures rickets at this time, and must be producing vitamin D in animal and human bodies exposed to it. Another apparently paradoxical situation is the high concentration of vitamin D in fish livers. Water vegetation is

land vegetation. It is, of course, true that the fishes, the livers of which are a commercial source of vitamin D rich oils, are carnivora, but the ultimate food sources of these fishes are the aquatic plants. There is no probability that ultra-violet rays penetrate sufficiently deeply into lakes and oceans that their animal life can utilize them for vitamin D synthesis. Do these facts mean that fish synthesize vitamin D by a strictly chemical process? It is not impossible. Antirachitic substances have now been synthesized from both ergosterol and cholesterol by chemical processes and by ultra-violet rays, and from ergosterol through the agency of various other forms of radiant energy, including X-rays, cathode rays and even by radium emanation. Certainly in the case of the antirachitics, the older conception must be abandoned that vitamins are substances which animal organisms are not capable of synthesizing.

The diversity of means by which antirachitics may be synthesized *in vitro* helps greatly to clarify the biological evidence which has clearly shown that the antirachitic agent in cod liver and probably other fish liver oils is not chemically identical with or biologically the equivalent of the antirachitic produced from ergosterol by ultra-violet rays and other forms of radiant energy. The existence of several different vitamins D or of several different forms of vitamin D must be accepted.

Synthesis of Other Vitamins In Animals

Since the question of vitamin synthesis by animals has been raised at this point in the discussion, it may be well to digress a moment to state the present situation with respect to the synthesis of the other vitamins, so far as it is known. First we will mention vitamins A and C, which, like vitamin D, can no longer comply with the older definition of a vitamin.

As to vitamin A we must conclude from evidence so far available that it is the only vitamin yet discovered that is synthesized only by animals and not at all by plants. It is no longer possible to speak of the vitamin A *content* of plants. One should speak of their vitamin A *activity* and reserve the vitamin A *content* usage for foods of animal origin. The former baffling problem of why vitamin A activity of plants is always associated with the presence of carotenoid pigments, particularly carotene, whereas vitamin A activity of foods of animal origin may easily be demonstrated with completely colorless material, has been solved by the demonstration that vitamin A is a metabolic product of animal life derived from carotene or from other carotenoids possessing the molecular structure of beta-carotene.

As to vitamin C, conclusive evidence now exists that among the higher vertebrates requiring this vitamin, only man, monkeys and guinea pigs appear unable to synthesize their requirements. Infants, however, appear to possess the power of vitamin C synthesis for the first few months of life. The provitamin C for those species, which definitely synthesizes the vitamin itself, has not yet been identified. The higher plants, however, are the important synthesizers of vitamin C.

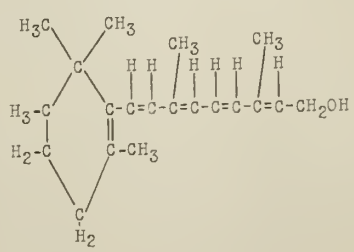
As to vitamin B and the other members of the older so-called vitamin B complex, it seems reasonably certain, at least for vitamin B, that it is exclusively a product of plant metabolism. It is an interesting fact that it is solely this group of vitamins whose necessity for animal life occurs also far down in the phylogenetic scale, i.e., among the insects, which appear to possess no greater ability to synthesize their needed supply than do the higher animals. Some of these lower forms do not appear to require such vitamins as A, D, E and C, all of great importance for higher animals. However, the vitamin requirements of the insects have not been investigated systematically.

As to the synthesis of the vitamin G group and of vitamin E in animal metabolism not enough is known about them, or their requirement by various species, to determine this point with certainty. At present the evidence points to their being primarily products of plant metabolism. In the case of the vitamin G group, substances of great importance occur regularly in milk, eggs and in the glandular tissues such as liver and kidney, but whether they are of exogenous origin remains to be determined.

Chemistry of the Vitamins

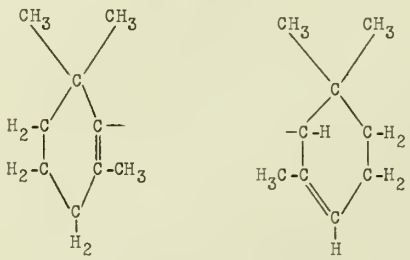
Great advances have been made in the past few years regarding the chemical nature of the vitamins. At least four have been isolated in chemically pure form and two of these have been synthesized in the laboratory. Vitamins A, B, C and D have been isolated and vitamins A and C have been synthesized.

Vitamin A is found to be one-half a molecule of beta-carotene as follows:



No. 1

When the terminal CH_2OH is changed to H H —C= and attached to another =C— and the unsaturated chain and ionone ring exactly duplicated, one has beta-carotene. Both the chain and the optically inactive ring are essential for the vitamin A structure. The unsaturated nature of the hydrocarbon chain is *not* important because synthetic vitamin A is the saturated (perhydro) form of the chain. When alpha-carotene, which possesses one ring like in beta-carotene and one with the simple modification shown in the accompanying structural formulas,



Beta-Ring Alpha-Ring

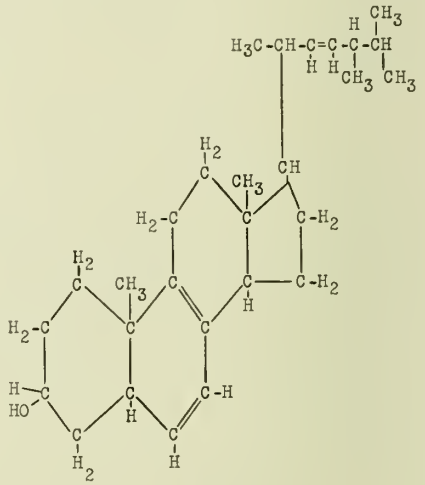
No. 2

is split in the center of the connecting unsaturated hydrocarbon chain only *one* molecule of vitamin A is formed, i. e., the half with the beta-ring. The oxide form of the beta-ring also has vitamin A activity.

The minimum biologically active dose of beta-carotene which will restore growth of rats has been found to be 1.2-2.4 micrograms per day. This is indeed activity of the hormonal order of magnitude and well illustrates the idea that vitamins are to be classed with the biologically important substances which exert a paradoxically great effect in infinitely little doses. It is somewhat surprising to realize, however, that even these minute amounts of provitamin A represent an enormous number of molecules. Although the exact number cannot be calculated since it is necessary to use the so-called gas constant in the calculation, which assumes that the molecules are completely undissociated, still it is certain that 1.2 to 2.4 micrograms of beta-carotene contain between 2,500 and 5,200 trillion molecules. This seems enough to supply several molecules for each cell in a rat's body, let alone for each of the epithelial cells which seem to possess the specific need for the substance.

It is now possible to determine with reasonable accuracy both the carotene and vitamin A content of plant and animal products by means of the recently developed spectrophotometric methods.

The first of the vitamins to be definitely isolated in the pure state was one form of vitamin D, called calciferol. Its chemical structure will no doubt be determined as soon as the exact structure of its very complex precursor, ergosterol, is settled. This form of vitamin D is clearly an isomeric form of ergosterol, not a decomposition product. It is of interest to note that calciferol has recently been shown to exert a definite estrogenic effect which is independent of its antirachitic action. A suggested structure of ergosterol which shows the difficulties of determining the structure of calciferol is given by Windaus and Langer (1933).



No. 3

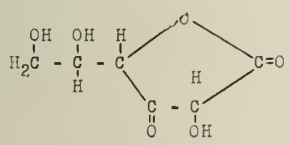
The amounts of the International Vitamin D Standard (a specific solution of irradiated ergosterol) which produces definite healing of rickets in a rachitic rat contains about 0.1 microgram of calciferol. Assuming the molecular weight of ergosterol and calciferol to be identical this amounts of about 150 trillion molecules. Thus the weight dose, as in the case of vitamin A, is extremely small but the molecular dose is very large.

Great strides are being made in unraveling the chemistry of vitamin B (B_1). The pure crystalline substance, conforming to the empirical formula $C_{12}H_{18}O_4N_4S$, differentiates it from all the other vitamins so far isolated because of the presence of both nitrogen and sulphur in the molecule. According to recent work by Williams (1935), the structure of this vitamin shows both a pyrimidine ring and an imidazole ring, the latter containing the sulphur as sulphonic acid. The minimum effective pigeon "day dose" of pure vitamin B to prevent experimental polyneuritis appears to be about one microgram. If it be assumed that the International Unit of Vitamin B (10 milligrams of the International Standard adsorption product of the vitamin prepared from an extract of rice polishings) contains one microgram of pure vitamin B, it is now possible to estimate the human requirements for this vitamin to prevent beri-beri.

This assumption is justified by the fact that approximately one International Unit Vitamin B daily will prevent experimental pigeon polyneuritis. The calculation of the human requirement for this vitamin can then be based upon the recent statement found in the Report of the Chief of the United States Bureau of Chemistry and Soils (1934) that 200 International Units of vitamin B per day in the form of tiki-tiki will effectively prevent beri-beri. In terms of pure vitamin B this means 200 micrograms or 0.2 milligrams. Tiki-tiki is a vitamin B containing preparation which is made from rice polishings by the Philippine government for treating beri-beri in the Philippine Islands.

Progress has been so rapid in the past two years with regard to our knowledge of vitamin C that we have passed from a status of rather concentrated preparations and false claims as to its chemical nature to the position of actual isolation and synthesis of the vitamin. The first correct hints regarding its chemical nature linked vitamin C with a hexuronic acid from which the name, ascorbic acid, was derived. It now turns out that vitamin C is not a true sugar acid but instead is a highly active unsaturated hexose whose feeble acidic properties are due to its OH groups on unsaturated carbon atoms.

The synthetic vitamin C which corresponds with the isolated substance has the following structure:



No. 4

The International Standard Vitamin C is the lone (levorotatory) form of this substance, and the International Unit is the Vitamin C activity of 50 micrograms of l-ascorbic acid. It requires about 500 micrograms (0.5 milligram) of l-ascorbic acid daily to protect a guinea pig from scurvy and there are clinical reports of cures of infantile and adult scurvy with daily doses of 30 to 40 milligrams of the pure vitamin. These amounts of pure vitamin C are contained in 40 to 60 cc. of average fresh lemon juice.

Distribution of Vitamins In Foods

A very large number of the foods used in the United States have now been tested for their vitamin content or vitamin activity. The tables showing the relative richness of these foods in vitamins A, B, C and D have become quite formidable. Quite a few foods have also been tested for vitamins E and G. The data in general have now become too extensive to be readily remembered. For every day practice it has become necessary to construct some general principles for knowing whether a food is likely to be relatively rich or relatively poor in any one of the important vitamins. The general principles that can be followed are as follows:

1. Vitamin A activity in foods of plant origin is associated with green and yellow color, and sometimes with red as in tomatoes, but never with colorless products and very little with neutral colors.

Vitamin A activity in foods of animal origin *may be* associated with yellow color but in contrast to foods of plant origin, foods of animal origin having little or no yellow color may be quite rich in vitamin A in some cases *very* rich, as in the case of cod liver and halibut liver oil. Thus color is not a sure guide to vitamin A rich foods from animal sources although naturally yellow products (i.e., not artificially colored) such as butter and cheese and also yellow yolked eggs can be depended upon. The milk of Guernsey and Jersey cows is both richer in fat and higher in color on the same feeds than is that from Holstein cows but the total vitamin A activity (due to true vitamin A plus carotene) has been shown to be essentially the same per unit of milk, cream and butter when the same feed is given, regardless of advertisements you may read to the contrary. The explanation lies in the fact, as recently determined, that the color of milk fat, i.e., its carotene content, under conditions that result in highest color, accounts at the most for only about 25 per cent of the vitamin A activity. Furthermore, the relative fluctuations in true vitamin A content of milk are not only less than the fluctuations in carotene content, but the absolute amount of vitamin A per unit of milk fat appears on the average to be four or five times that of the carotene content. Recent data gives the true vitamin A range from 10 to 20 micrograms per gram of fat and the carotene range from 2 to 8.5 micrograms per gram.

2. Vitamin B (B_1) in the foods of plant origin is an important constituent of whole seeds and leaves but not of the degerminated cereals or the products of degerminated cereals. Yeast, of course, is relatively rich in vitamin B as is also the germ of seeds. Most of the animal products used by man for food contain some vitamin B.

3. Vitamin C is found most widely distributed in nature in plants and is associated there with freshness and succulence. Fresh fruits and fruit juices, especially the citrus fruits, tomatoes, peppers and fresh leaves, such as cabbage, and seeds

(*Continued on Page 276*)

Intestinal Parasites of Children in the Northwest*

William A. Riley, Ph.D.
University of Minnesota

IT WAS not many years back that in many communities the popular diagnosis of infant ailments was largely restricted to "colic" or "worms." Pumpkin seeds and worm remedies, purveyed by the itinerent street vendor or the village druggist, held an honored place along with the sulphur and molasses, and the sassafras tea which were thought so essential for preserving the health of older members of the family.

In modern times a more widespread knowledge of public health problems, coupled with the efforts of patent medicine advertisers, has greatly extended the range of choice. In the North, at any rate, the grosser parasites have lost prestige. Even the average physician rarely considers them, unless accidental expulsion of a worm, or conspicuous segments, brings them to notice.

This is, in part, due to a considerably lessened incidence of helminth infections in the general population, brought about by improved sanitation, general use of water closets in our cities, and emphasis on the importance of the proper cooking of foods. On the other hand, recent experiences have shown that under some conditions modern water supplies may increase the hazards of amebic infections. Water closets which drain into lakes and streams insure, rather than lessen, opportunites for the spread of the fish tapeworm. Ease of travel takes increasingly large numbers of our population into tropical or sub-tropical regions as well as into sections of our own country where they may be exposed to vastly increased chances for infection by parasites.

Symptoms of intestinal parasitism are usually obscure. There may be vague abdominal discomfort or even severe pain. Nausea, or vomiting, disordered appetite, or geophagy, may be suggestive. Mild nervous symptoms, night terrors, insomnia, general restlessness, are not uncommon. More severe effects, hysteria, convulsions, temporary paralysis, even meningitis, have been observed repeatedly to have cleared up promptly on the expulsion of ascarids, pin-worms, or other invaders.

The possibility of such symptoms being due to parasitism, even in regions where helminthic infections are uncommon, should not be overlooked and neither should diagnosis be dependent on macroscopic evidence. The examination of simple fecal smears, of suitable density and with proper adjustment of illumination usually affords definite evidence if parasitic worms are present. A simple but efficient method of concentrating the eggs on cysts is that of emulsifying in water, a fecal sample the size of a walnut, allowing it to sediment in a tall bottle or cylinder, repeating several times at brief intervals and then making mounts for examination. However prepared the mounts should not be too dense—a good rule is that they should be sufficiently transparent so that ordinary print could be read through them.

As pointed out later, examination of feces microscopically does not suffice for the detection of pin-worm infections.

Our discussion of intestinal parasites of children in the Northwest will consider briefly the Protozoa, the Cestoda and the Nematoda. The eggs and the cysts of the species most likely to be met with are illustrated in the accompanying plate. The only trematode, or fluke, of known significance in this region is not an intestinal parasite but the larval form responsible for "swimmers itch."

Protozoa

Endamoeba histolytica may infect individuals of any age group though relatively few cases are reported for young children. Several years ago we examined about three hundred Minnesota children under fifteen years of age without finding a single carrier case, but this certainly is not due to any natural immunity and neither is it to be regarded as a definite index of conditions here. Dysenteric cases in children should be given as careful scrutiny as would those of adults. On the other hand, amebic liver abscesses are rarely found in the lower age group. So much attention has been given to the whole subject of amebic infections and their treatment in the American literature of the past two years that it need not be entered into here.

Endamoeba coli is almost uniformly regarded by special students of the subject as non-pathogenic. Nevertheless, it is important as an index of fecal contamination of food and drink and,

*Prepared especially for the Pediatric Number of THE JOURNAL-LANCET.

further, because it so readily leads to mistaken diagnosis of amebiasis. Figures obtained some years ago, from three widely separated orphanages in the Northwest, were startling. In 140, 38, and 29 individual examinations the percentages of positives to *E. coli* were respectively 27, 68 and 80. Admittedly the numbers dealt with were too small for generalizations but they did express the actual situation in the three institutions at that time. It is only fair to point out that there was no way of determining how many of these were acquired after entering, but it was indeed fortunate that carriers of *E. histolytica* were not included.

In diagnosis, it should always be borne in mind that mixed infections are common and the fact that *E. coli* or one of the other known intestinal amoeba is identified should not limit the search for the pathogenic species.

Giardia lamblia, a pear-shaped flagellate inhabiting the duodenum and gall bladder is peculiar in being binucleate and possessing four pairs of flagella in the motile stage. The anterior half is modified to form a ventral sucking disk by which it attaches to epithelial cells of the intestine. Like the intestinal amebas, Giardia is transferred to new hosts by cysts. These are about 12″ in length, ovoidal as illustrated, and may exhibit two, or four, or even more nuclei when stained by iodine, or haematoxylin. These cysts, like those of Endamoeba, may be carried by house flies, as well as by food and water. Boeck, 1921, found that they remained viable in water for at least a month. It has been established that rats and mice may play a role as reservoirs and disseminators of Giardia of man, although they are also hosts to other species.

Children are more liable to infection than are adults. In the groups referred to in discussing *E. coli*, there was a total incidence of 30 per cent for Giardia. In a local, carefully kept children's home the incidence was 11.5 per cent.

Giardia is very often associated with a diarrhoeic condition, and the conclusion that this may be induced by the irritation due to presence of large numbers of the flagellates seems justifiable. Nevertheless, it is evident that in the majority of cases the presence of the parasite is tolerated without noticeable effect on the host. Magath and Brown, 1930, in their careful study, found no evidence of relation to diarrhoea.

Chilomastix mesnili and *Trichomonas hominis* are flagellates of the large intestine and particularly the colon of man. The former moves in an active, jerky manner as contrasted with the slower rotatory movement of Trichomonas. Chilomastix forms lemon-shaped cysts, measuring from 7-10″ by 4.6″ but, although described from time to time it is doubtful if *Trichomonas hominis* produces cysts. Figures relative to the incidence of these flagellates are vitiated by numerous failures to distinguish the two species. There is no evidence that either is pathogenic.

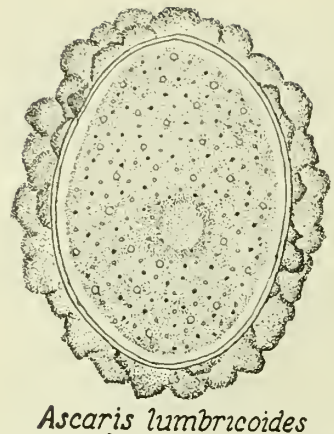
Cestoda

The large tapeworms infecting man in the United States are *Taenia saginata, Taenia solium*, and *Diphyllobothrium latum*. In addition, the rodent tapeworms, *Hymenolepis nana* and *Hymenolepis diminuta*, and the double-pored tapeworm, *Dipylidium caninum*, of the dog and cat, may also occur, particularly in children. The hydatid worm, or immature *Echinococcus granulosus*, must also be reckoned with.

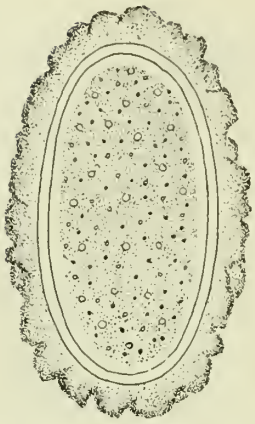
Taenia saginata, contracted from beef, is characterized by the fact that the proglottids are usually discharged singly instead of in short chains, and the ripe uterus has 15-30 dichotomous branchings. The head is hookless. Opportunities for acquiring this parasite vary greatly in different localities and at different times. The latest figures available show an average of one in 250 Federally inspected beef carcasses. On the other hand, on one rather recent occasion a lot of 62 Minnesota cattle had 20 infected. It was traced to the fact that some Indians employed in brush clearing on the ranch harbored the mature worm and the cattle were grazing on polluted soil. A surprising case of a one-year old child who harbored a mature worm of this species was traced to the mother's practice of feeding it raw scraped beef.

Taenia solium is now known to be very rare in this country, many of the earlier records being due to misidentification of *T. saginata*. Only one case in the Northwest has come to my attention in the last decade. The species is distinguished from other large cestodes of man by its armed head, by the fact that segments are usually discharged in the form of short chains, and by the branchings of the uterus being dendritic and not to exceed 12 in number. This species is particularly dangerous because of the possibilities of auto-infection. A striking illustration is afforded by Mac Arthur's (1933) report of cysticercosis of the brain being the cause of 10 out of 22 cases of epilepsy studied. Only five of these responded to the complement-fixation test.

Diphyllobothrium latum has come only tardily into fame as a parasite in the Great Lakes region, since Nickerson's clear-cut demonstration of its endemicity at Ely, Minnesota, in 1906. The undue



Ascaris lumbricoides fertile egg



Ascaris lumbricoides infertile egg



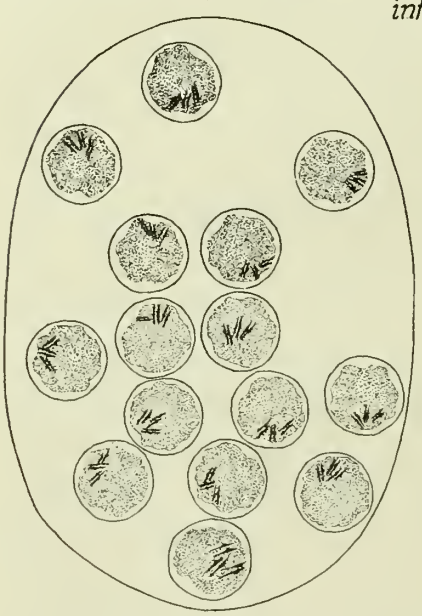
Cyst of Endamoeba histolytica



Cyst of Endamoeba coli



Trichuris trichiura



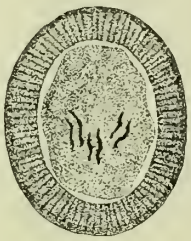
Dipylidium caninum



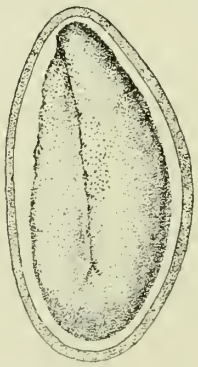
Cyst of Chilomastix mesnili



Cyst of Giardia lamblia



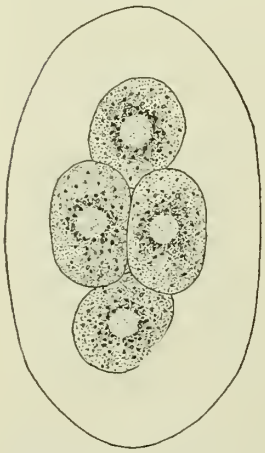
Taenia saginata



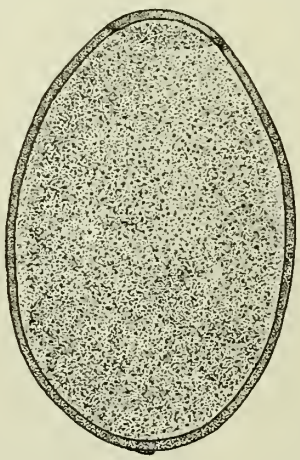
Enterobius vermicularis



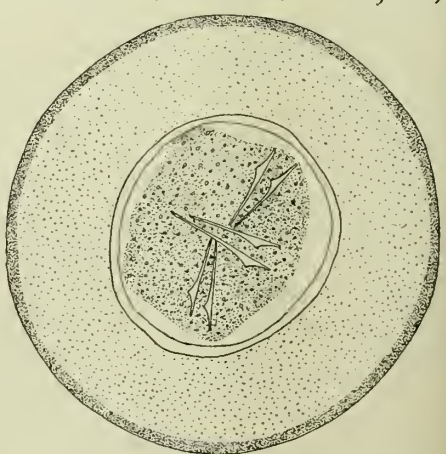
Hymenolepis nana (after Joyeux)



Necator americanus



Diphyllobothrium latum



Hymenolepis diminuta

The eggs and cysts of important intestinal parasites of significance in the Northwest. Drawn to scale, excepting egg-capsule of Dipylidium.

proportion of cases in young children, in recent literature, is due to interest in those that were clearly acquired locally. The species is readily recognized by the large, operculate brown eggs, measuring about 70x45 m., as well as by the central, rosette-like coiled uterus.

Hymenolepis nana, the dwarf-tapeworm, measures from 5-50 mm. in length by .5-1 mm. in width. Though regarded by Stiles, 1903, as the commonest of human tapeworms in the United States, and frequently reported since then, its presence is usually overlooked except as the characteristic eggs 30-60 mm. in diameter, are noted in microscopic examination of feces. I have never noted it in Minnesota children although it doubtless occurs. This species is unique in that it may complete its development from egg to egg in one individual, the entire life cycle being completed in two to three weeks. This fact, and the fact that it is harbored by rats and mice, account for its frequent occurrence in some sections. It has recently been demonstrated that this tapeworm, like related species, may also utilize certain insects as intermediate hosts.

Hymenolepis diminuta of rodents and man, is much larger than *H. nana* since it varies from 20-60 cm. by 3-4 m. The egg is larger and lacks the characteristic thread-like filaments. Various cereal-infesting insects serve as necessary hosts for the larval stage of this worm and human infections are due solely to the accidental ingestion of these insects. Five cases in Minnesota children have come to my attention, one of which in a nine months child was reported in collaboration with Dr. W. R. Shannon, in 1922. Though male fern is the preferred drug for this, as for other cestodes, some workers have found *H. diminuta* somewhat refractory.

Dipylidium caninum, the commonest tapeworm of pet dogs and cats also occurs at times in children. It is a slender worm, 10-40 cm. in length, characterized by the fact that each proglottid contains a double set of reproductive organs and a pore on each side. The ripe segments are brick-red in color, containing the embryonated eggs in packets of 8-15 formed by diverticula of the uterus. Infection occurs only through the accidental ingestion of an infected flea or a dog louse, either of which may serve as intermediate host. As is to be expected most of the hundred or more reported cases were in infants. The most remarkable was reported by Vacca, 1909, in an infant 20 days old. A house cat, which slept in the same crib, harbored mature worms and infected fleas.

Echinococcus granulosus, or the hydatid worm, occurs in man only in the mature stage. Although it often requires many years after infection for the cysts to manifest themselves, numerous cases in children are known. Though the adult worm has rarely been found in dogs in the United States, there are many records of the occurrence of the immature stages in cattle and sheep, which show that the sexual stage in carnivores must fairly commonly be present. Recent studies have shown that it is harbored by wolves in northern Minnesota and there is thus an additional opportunity for human infections as well as animal.

Nematoda

While the accompanying chart includes the egg of the hookworm, it should be noted that it does not occur naturally in the North. Occasionally imported cases come to the attention of physicians.

Ascaris lumbricoides, the cosmopolitan roundworm of man, is singularly rare in the Northwest, especially when we consider that a large part of the population comes from parts of Europe where the worm is commonly present in its human host. In the course of a decade I have never found the eggs in feces examination, though some half-dozen specimens have been brought to me by astonished students who have found them in their evacuations. The eggs are ellipsoidal, 60-75 m. by 40-50 m., and are covered by a mammillated albuminous sheath which gives them a very characteristic appearance. As discharged, their cytoplasm is unsegmented. Unfertilized eggs are frequently present and as they differ considerably from fertile ones they may lead to errors of diagnosis. Sometimes the sheath is absent in either type and this, too, is confusing. That the adult worm is by no means innocuous is all too well established. Serious and even fatal cases of intestinal obstruction and intussusception, perforation of the bowels and resultant peritonitis, and pulmonary gangrene are often recorded. The migratory habits of the adult worms lead to many complications. An important fact which has not yet appeared in many of the textbooks is that the young worms immediately after hatching in the intestine undergo a "ten-day homeseeker's excursion," in the course of which they pass to the liver, and then to the lungs, and finally *via* the trachea and oesophagus to the intestine where they mature. As a result of this migration they may cause grave pulmonary disturbances, experimental animals commonly dying of pneumonia in a week or so after infection. Severe bronchial symptoms often mark the migration of the larvae from the lungs. For removal of adult worms santonin, in exact dosage is commonly used. Schikhobalova

and Brandbourg, 1933, recommend .015 grams for each year of age, in three portions with one hour intervals, on two successive days. The evening before, a laxative was given and one followed an hour after treatment. Oil of chenopodium is widely used. Lamson, Brown and Ward, 1932, report favorable results in the treatment of 2,500 cases with hexylresorcinol.

The possibility of human infections by the ascarids of dogs and cats exist, although reported cases are excessively rare.

Enterobius vermicularis (Oxyuris), is undoubtedly much more common than available statistics indicate, since eggs are rarely found in the feces. This is strikingly illustrated by recent studies of children at Minsk, U. S. S. R. Of 3,153 cases examined by feces there were only 1.2 per cent found to harbor this worm. Examining a comparable group of 404 children from the same region by using a perianal swab and by examining dirt from under the fingernails, Levine, 1933, found 50 per cent positive. Through the courtesy of Dr. W. A. O'Brien, one of my students recently examined 389 appendices from the collection in the University Hospital. Twenty-one of these, or 5.4 per cent, harbored pin-worms. Probably none of these would have been detected by the usual routine fecal examination. There is still much division of opinion as to whether the worms play any role in the causation of appendicitis but in view of its well-known injurious action —mechanical irritation, pruritis, insomnia, and nervous reactions, even to the extent of convulsions and simulated meningitis—the possibility of its presence in any part of the alimentary tract should be kept in mind. The ease with which the patient builds up his own infection as well as transfers it to associates necessitates that rigid rules of sanitation be enforced. Fingernails should be kept closely clipped and pajama drawers worn. The use of mercurial ointments will alleviate pruritis and reduce chances of autoinfection. To remove the worms high enemas of soapy water are valuable. Santonin is the preferred drug for supplementing this treatment.

Trichuris trichiura, the whipworm of man, is one of the most common of his intestinal parasites. It is found chiefly imbedded by its whip-like anterior end in the mucosa of the caecum and the appendix. The oval brown eggs, 50-55 m. by 20-25m. are very characteristic in having at each pole a knob-like, clear button, resembling a stopper. As a rule the worms seem inoffensive though some workers insist that they, like Enterobius, play a role in appendicitis. Treatment for removal of whipworms is of little avail.

Trichinella spiralis has received much publicity since its dangerous nature was demonstrated in 1860, but there is still great need for public education as to the danger from eating imperfectly cooked pork products.

This, and the ease with which infections may escape correct diagnosis, are well illustrated by the finding of 17.9 per cent of 117 cadavers examined in the University Medical School (Riley and Scheifley, 1934). Death had in each case been due to other causes and yet several infections were so heavy as to indicate that at some time the individual had been seriously affected. Cases of intestinal disturbance simulating typhoid but which do not respond to the Widal test should lead to inquiry as to recent use of pork. It should be emphasized that the high eosinophilia so often present in these cases does not become manifest before the sixth or seventh day, when the larvae are being disseminated.

Data relative to the various protozoal and helminthic infections of children in the Northwest are very meager and it is hoped that physicians who have made systematic studies along this line will make their records available.

Adjuvants in the Treatment of Erysipelas in Infancy*

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George V. Herrman, M.D.
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CONCLUSIONS as to the mortality and therapeutic results in erysipelas of children have been based usually upon the total figures for childhood, rather than from age groups. As a result there have been wrong impressions received, for it is well known that the younger the child the smaller is the chance for recovery with any sort of treatment thus far offered. Nobecourt,[1] of France, has emphasized the fact that in the young infant there is apparently no natural immunity transmitted from mother to child, as is the case with measles, diphtheria and the streptococcus-angina and streptococcus-rash of scarlet fever. Furthermore, the employment of the various antisera has not greatly changed the unfavorable outlook for the infant who becomes infected.

It has been our experience that at the onset the disease may not have been recognized as of serious importance until it begins its rapid spread. We think that the physician, therefore, will find it well to acquaint the members of the family with the prognosis in early life. This will make it easier to get the child into the hospital, where the many advantages are available at once and at a time when they are of most effect.

We wish to comment briefly upon the various agents recently employed in the treatment of erysipelas in infants; we shall then report our experience with a small number of cases.

Use of Human Blood—Convalescent serum was given intramuscularly by Jordon and Dustin at the Providence City Hospital.[2] The serum was obtained from whole blood taken during convalescence from uncomplicated erysipelas. It was stored in sterile ampules, placed on ice and is said to have retained its potency. The authors reported that some remarkable results were obtained in serious cases of the disease. In a recent personal communication from the Charles V. Chapin Hospital, Dr. D. L. Richardson states that convalescent serum is still used when the individual is known to be sensitive to horse serum; commercial serum is also used in special cases.

Convalescent serum would appear to be more effective than serum taken from the donor months or years following the donor's attack of erysipelas. As it is not rare for an adult to have repetition of this disease, one would expect that the passive immunizing properties do not remain long in the blood of the donor. Blood from a recent case is not easily obtainable in practice, but might be gotten through the agency of a hospital.

Several years ago one of us[3] reported a few infants treated for streptococcus infections by transfusions of adult normal blood, in which recovery from desperate erysipelas seemed to offer some hope that this method of treatment might be justified. The treatment with adult blood is based upon the fact that young adults show a better chance to survive the disease; such blood introduced into the circulation of the child early and repeatedly might give the very young individual a similar ability to outlive the infection.

Even were the transfusion of adult normal blood of no specific curative value, it may well be true that early intravenous injections, continued in repeated doses, would be of considerable help nutritionally. These may prove to carry the child along until the disease becomes self limited. It is not at all rare for the untreated case to have a relapse, the "fire" running over the same territory again, and showing a later tendency to deep abscess formation.

We suggest that the patient be transfused as soon as possible after the diagnosis is made. Small repeated transfusions of citrated blood given every other day, using a new donor each time, probably gives the best results. We use 8 to 10 cc. of blood per pound of body weight. The interval between transfusions depends upon the patient's daily blood findings, temperature, spread of the disease and the general condition.

There is practically always an accessible vein in some non-inflammatory area. We have had only an occasional reaction following transfusion—these reactions were noted only by a rise in temperature which apparently had no harmful effects on the patient.

The technical difficulties in the introduction of the total amount of blood planned to be given have probably interfered with the success of many transfusions. The size of the needle to be used depends upon the caliber of the vein as well as the location. The scalp veins are the most available in infants and interfere least with maintain-

*From the Department of Pediatrics, School of Medicine, University of Kansas.

ing the needle in situ. We have found a satisfactory method for small veins, using a Kaufman-Luer syringe, and indirect pressure in addition to gravity.

Roentgen Irradiation—It has been recommended by Desjardins that "one-third to two-thirds of an erythema dose of roentgen rays of medium wave length, generated at a potential equivalent to a sphere gap tension of from 120 to 140 peak kilovolts, and filtered through 4 mm. of aluminum" be used in the treatment of erysipelas. He also states that it is very important that the treatment should extend into the adjacent normal tissues well beyond the perceptible limits of the involved territory. The above roentgenologist states that children, for some reason, do not receive as much benefit from this treatment as do adults.

The following X-ray technic is used by Dr. Galen Tice, the roentgenologist at the University of Kansas Hospital:

Mil.	Min.	KvP.	Dist.	Filter	Roent. Units
5	2½-5	130	20	0	150

In his opinion this degree of exposure does not injure the blood elements. Treatment can be repeated.

The number of treatments depends on the response of the patient. Sometimes one treatment is enough, if not, the same dose is repeated in a day or two.

In our cases we have used X-ray therapy or ultra-violet ray therapy and have not mixed the two treatments. There are opinions expressed by Fantus (Cook County Hospital Therapy) and others that roentgen therapy is not advisable for infants with erysipelas.

Ultra-Violet Irradiation—It is interesting to learn that one exposure to the mercury quartz burner may be a sufficient treatment for erysipelas, as recommended in the Cook County Hospital Therapy. Fantus[4] states that the exposure must include the lesion and two inches around it; that the rays must be direct and at a distance of 12 inches; the time for children is graded down below the usual 10 minutes.

Nightingale and Starr[5] have recently reported their conclusion that ultra-violet ray treatment is the most successful, least dangerous and least expensive; that it is better than serum therapy. Their results in infants: The untreated case has one chance in three to recover; that one in five die in spite of early treatment; that serum-treated cases have a morbidity of 15 days, while ultra-violet-treated cases have a morbidity of 7.6 days. Ultra-violet irradiation is given early and for three successive days. The dose is slightly less than one and one-half erythema-producing, for infants. The sooner it is given the lower the mortality and fewer the complications, according to these writers. Richardson reports that the results from the ultra-violet light treatment at the present time are somewhat encouraging.



Characteristic posture of infant with the swollen thighs adducted in a line at right angles to the body. At the time this picture was taken the rash extended from the costal edges downward nearly to the ankles.

"Only good can come of this method and it has no dangers," is the opinion of ultra-violet irradiation, in the 1934 edition of the English text, Garrod, Batten, Thursfield and Paterson. This book states that the object in the use of ultra-violet ray is to cause a leucocytosis in the surrounding skin so that the streptococci may be destroyed when entering this region and the inflammation kept from spreading. Both the healthy and affected regions should be exposed. As high as one and one-half to two times the erythema dose is used in England.

At the University of Kansas Hospital, the infant is exposed for three minutes at 18 inches, over the area of redness and the immediate surrounding border. The treatment is given every day for the period of the infection.

We have personally taken care of 10 infants in this hospital, whose treatment-reports are as follows:

Resume of 10 Cases of Erysipelas in Infancy—In Order of Age

1—Age, 13 Days—
Infection followed circumcision. General distribution to trunk and feet.
Treatment:
Second Day of Disease—Transfusion, 60 c.c. of citrated adult normal blood. Roentgen exposure.†
Third Day—Tranfusion, 75 c.c.
Eighth Day—Transfusion, 60 c.c. Roentgen exposure.†
Recovery tenth day.

†Dosage—Mil. 5, Min. 5, KvP. 130, Dist. 30, Filter 0, Roentgen Units 150.
No further spread of inflammation following the x-ray exposure on the second day of disease until the eighth day, when another exposure of same dosage and the third transfusion of blood was given.

2—Age, 21 Days—
Infection began in female genitalia, spreading from vulva to groins.
Fourth Day of Disease—Small transfusion.
Left hospital after three days—improved.
Nineteenth Day—Developed abscess of thigh—re-entered hospital with meningitis and sepsis.
Transfusion, 22 c.c.
Hemolytic stereptococcus obtained from meninges.
Death.

3—Age, 60 Days—
Erysipelas began on neck.
Third Day—Birkhaug serum, 10 c.c.
Fourth, Fifth, Sixth Days—Birkhaug serum, 10 c.c.
Sixth Day—Developed bronchopneumonia, severe abdominal distention.
Died within 24 hours from circulatory failure.

4—Age, 90 Days—
First lesion on female genitalia.
Third Day—Birkhaug serum, 10 c.c.
Fifth Day—Birkhaug serum repeated.
Seventh Day—Transfusion, 180 c.c.
Ninth Day—Transfusion, 150 c.c.
Recovery on fifteenth day.

5—Age, 120 Days—
First lesion on female genitalia, spreading to lower half of body.
Sixth Day—Transfusion, 175 c.c.
Eighth Day—Transfusion, 150 c.c.
Tenth Day—Transfusion, 100 c.c.
Recovery on twelfth day.

6—Age, 180 Days—
Began on face and covered the entire body.
Seventh Day—Transfusion, 100 c.c.
Eighth Day—Birkhaug serum, 27 c.c.
Ninth Day—Ultra-violet ray therapy.
Tenth Day—Transfusion, 100 c.c.; Birkhaug serum, 27 c.c.; ultra-violet ray therapy; blood culture positive for long chain hemolytic streptococcus.
Eleventh Day—Transfusion, 100 c.c.; ultra violet ray therapy.
Twelfth Day—Transfusion, 100 c.c.; ultra-violet ray therapy.
Death from sepsis.

7—Age, 210 Days—
Lesion three days old; location of first lesion, genitalia.
Intraperitoneal blood, 50 c.c. each of five days.
Tenth Day—Transfusion, 100 c.c.
Fourteenth Day—Transfusion, 100 c.c.
Sixteenth Day—Transfusion, 125 c.c.
Twenty-first Day — Birkhaug serum; Roentgen therapy.
Twenty-second Day—Birkhaug serum.
Twenty-third Day—Birkhaug serum.
Died on twenty-fourth day—meningitis.

8—Age, 13 Months—
Infection began on nose; spread to face and scalp.
Burkhaug serum during the most active stage, one injection.
Uneventful recovery in eight days.

9—Age, 13 Months—
Began on face and scalp; swollen left cervical gland; temperature, 105 at beginning.
Third Day—Birkhaug serum intramuscularly.
Fourth Day—Birkhaug serum; normal adult blood, 50 c.c., intramuscularly.
Fifth Day—Citrated blood, 50 c.c., intramuscularly.
Recovery on seventh day.

10—Age, 18 Months—
First lesion on the leg.
Second Day—Birkhaug serum, 10 c.c.
Fourth Day—Transfusion, 90 c.c.
Sixth Day—Transfusion, 35 c.c.
Seventh Day—Convalescence; normal temperature.
Recovered.

With so many therapeutic agents and in such a variety of stages in which treatment was begun it is impossible to draw any reliable conclusions. A complication such as meningitis, sepsis, or bronchopneumonia makes the case of erysipelas in a young infant hopeless. No case which was moribund on admission was included.

Comment

No single remedy has been found specific in the treatment of erysipelas in infants. The failure of local applications to cure the disease leaves the way clear for more investigation as to the adjuvant effects of irradiation with roentgen or ultraviolet rays. General measures should be given more attention than in the past. At the onset of the disease, in the first 24 hours if possible, an intramuscular injection of convalescent blood or a transfusion of suitable normal adult blood, may be of the greatest value. On alternate days the transfusion should be repeated.

We have had the opportunity to observe several other infants treated with antiserum alone. It has been used because it had been recommended for adults; in certain infants in this series, some recovered and others died.

Infant should not be removed from breast nursing, for nutrition will be better if nursing be maintained. A desperately sick infant will nurse at the breast when it would not attempt to hold on to the bottle. In the newly born child it may be advisable to secure wet nurse's milk. In general breast-fed infants overcome infections better, and this advantage should not be overlooked in erysipelas. It has been recognized that erysipelas beginning in the diaper region is less dangerous; beginning in the umbilical region it is most fatal.[6] One now sees fewer infections originating in the neighborhood of the umbilicus because of the better obstetric technic in dressings.

Local applications have no analgesic, sedative or other beneficial effect, so far as one might determine from observation of these restless suffer-

ing infants. Formerly the only treatment given most cases of erysipelas was ichthyol ointment with which the layman became familiar and which he sometimes still asks for, designating it by the name of "black salve." It was first recommended in the last century by the European profession[7] for adults. Magnesium sulphate, boric acid packs, collodion have been used in all hospitals, with no curative results. Nitrate of silver has been applied beyond the inflamed area, to produce a leucocytosis of the still healthy skin.

Summary

Of this small number of ten infants, six survived erysipelas. Such an outcome is better than we formerly thought possible in such a fatal disease in early life. However, this leaves much to be desired, especially as we cannot prove that it was through any one line of treatment that the infants recovered.

Early hospitalization offers the opportunity to begin at once using measures which seem to be adjuvants. Blood therapy, breast milk, irradiation are beneficial to the infant, even if not specific for the infection. It seems plausible that ultra-violet irradiation should be more effective upon the spreading infection than any sort of external application. We have used all the common topical applications; they seem to be without effect. Attention should be directed chiefly to supportive, adjuvant measures, and toward the relief of pain which is severe in infancy.

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The Vitamins—A Discussion of Some Aspects of Past and Present Knowledge

(*Continued from Page 267*)

(peas) are the best sources of vitamin C. Roots and other fruits are important. Liver is the only commonly eaten animal product rich in vitamin C.

4. Ordinary foods cannot be depended on for vitamin D. Eggs come closest to being of importance in supplying the antirachitic vitamin in important amounts. The increasing use of cod liver oil in the ration of laying hens in this country will assist in assuring the vitamin D content of eggs. Cow's milk, in general, cannot at present be depended upon but the production of vitamin D milk either through direct irradiation of the milk, addition of vitamin D concentrate to milk or through the feeding of irradiated yeast to milking cows is likely to increase in the future. The amount of vitamin D activity per unit of milk that can be produced by irradiation or feeding seems to be limited to a maximum of 150-250 International Rat Units per quart.

5. We will pass over vitamin E because its importance in general human and animal nutrition has not yet been determined. However, clinical records are available indicating relief of some cases of human (female) sterility by use of vitamin E.

6. Vitamin G (B_2) in foods of plant origin is primarily a constituent of the leafy parts of plants. In animal products, meats, milk and eggs are the important vitamin G-containing foods, as determined by the biological assays so far carried out. The importance of these foods in pellagra is well known and is regarded by many as supporting the theory of a vitamin-deficiency etiology for pellagra.

7. All of the vitamins except vitamin C are relatively stable and remain fairly intact in the ordinary processes of food preparation in the home and in the canning of foods at home or in the cannery. Vitamin C is the vitamin most subject to change and destruction. Some foods, such as spinach, even lose considerable vitamin C between the time the leaves are picked and the time they reach the consumer. Antiscorbutic foods lose their value progressively in storage. Open kettle cooking and the ordinary home canning are very destructive. The commercial canner knows how to preserve most of the vitamin C in fruits and vegetables if he will take the trouble to do so.

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Heart Disease vs. "Heart Trouble"*

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THE main theme of this discussion is a plea for accuracy in evaluation of the murmurs of childhood. The problem is a serious one, because we owe it to our patients to inform them as to the true state of affairs. Our responsibility is grave, because misjudgment may endanger the life of the patient or create a neurasthenic who is needlessly worried about his heart. It is this latter group which I designate as the group with "heart trouble." These children may have perfectly normal hearts, but are being needlessly restricted. Their parents may have been told that the child's heart is bad and that he must be restricted in his play. The child is told that he cannot climb trees, roller skate, play football, et cetera. His natural reaction is to disobey such instructions, so for a short period his daring overcomes his sense of duty. He soon finds himself in the top of the nearest elm tree. You can imagine his mother's shrill scream as follows: "Johnny, come down out of that tree this minute; remember your heart!" Well, even the strongest men must eventually give in to authority. Johnny now stands on the sidelines and watches the rest of the boys play. He feels quite lost, but it can't be helped—he has "heart trouble." It is easy to see what a grave injustice has been done to Johnny.

There is, of course, the other side to the story. A child with a slight amount of real heart damage may follow one of two courses. He may improve as years go by or he may become so bad as to be a cardiac cripple the rest of his life. The treatment he receives during the early stages of his disease determines which road he will follow. Consequently, the accurate, early diagnosis of his condition is paramount. Without an accurate diagnosis we cannot give an accurate prognosis.

The cardiac murmurs are due to one of three causes: Firstly, acquired heart disease; secondly, congenital heart disease; thirdly, physiological situations of no pathological significance. We must, then, place the murmur we hear in one of these three classes.

The important thing to determine is the time of the murmur in the cardiac cycle. For practical purposes we can consider all diastolic murmurs as being caused by organic heart disease. The systolic murmurs may be caused by any one of the three conditions named. The differentiation between congenital heart disease and acquired heart disease is a fairly simple one, and the following table illustrates the essential diagnostic features:

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TABLE A
DIFFERENTIAL DIAGNOSIS OF CONGENITAL AND ACQUIRED HEART DISEASE

	Congenital	*Acquired*
Age:	Usually discovered in early infancy.	May develop any time in life but usually after infancy.
History:	Beginning usually in infancy and referable to circulatory changes.	Rheumatic fever or other infectious process.
Symptoms:	Lack of Aoration: 1. Cyanosis. 2. Clubbing. 3. Delayed mental growth. 4. Delayed physical growth. 5. Dyspnea due to poor oxygenation.	Passive Congestion: 1. Edema. 2. Enlargement of liver and spleen. 3. Dyspnea due to edema. 4. No cyanosis. 5. Clubbing a late event.
Progression of Findings:	1. Cardiac findings fail to progress.	1. Progressive changes in findings.
Cardiac Hypertrophy:	Right sided or not at all.	Left sided in aortic disease. Right sided in mitral disease.
X-ray Changes:	Enlargement of right ventricle. Lack of enlargement of left auricle as seen in oesophogram.	Enlargement of both ventricles. Enlargement of left auricle as seen in oesophogram.
Apex Beat:	Feeble or unchanged.	Accentuated.
Murmur:	Character: Loud, harsh, musical. Location: At base.	Character: Soft blowing. Location: At apex.
Blood Changes:	Polycythemia. Increase in hemoglobin.	Anemia. Leucocytosis.
Vascular Changes in Eye Grounds:	With Cyanosis: 1. Irregularities in lumina of the vessels, which become tortuous like large angle worms. Knapp, 1861. 2. Vessels become darker. 3. Peripheral twigs distended. 4. Small hemorrhages.	No characteristic changes.
Electro-cardiograph:	1. Right axis deviation. 2. Great amplitude to complexes. 3. Great variation in the height of the complexes.	Changes of conduction chiefly. Secondary alteration of axis deviation. Mitral—Right axis deviation. Aortic—Left axis deviation.

The accidental murmur is a little harder to diagnose accurately. You are dealing with a systolic murmur having its usual location at the base of the heart. It is characteristically evanescent in character, and has a short, soft, blowing quality. It is poorly transmitted, and unassociated with other evidences of heart disease. These characteristics seem simple enough, but when you try to apply this description to the child in your office you don't feel satisfied. With this idea in mind, various authors have tried to find more objective diagnostic means which would clinch the problem.

Maliner, in 1931, evolved his epinephrine test, which is a practical office procedure. This is a laudable idea, and one which offers great promise. The test consists of the injection of eight minims of adrenaline subcutaneously. This is a step in the right direction as it is an attempt to find a specific, simple clinical test which will help us in this problem.

His conclusions were that adrenalin has the following effects:

1. It intensifies the normal sounds of the heart.
2. It intensifies the murmurs of valvular lesions.
3. It localizes these murmurs to their respective valves.
4. It causes a disappearance of non-pathological murmurs, or tends to localize them to a functional area.
5. It brings out valvular lesions of supposedly cured cases, and consequently is useful before discharging a case.
6. It causes an initial weakness of the heart sounds, and murmurs, in those cases which are due to a myocardial weakness.

His studies allowed him to further evaluate the questionable murmurs in his clinic. He also found that he had to change his previous diagnosis in several instances.

Bass, Mond, Messeloff, and Oppenheimer interested themselves in this problem and attacked it from a different standpoint. They wished to analyze accidental murmurs from a qualitative standpoint. Sound tracings were made on sixty-four children with systolic murmurs. The records of all the murmurs contained vibrations of high frequency. Eighty-six per cent of the functional cases presented high-pitched vibrations only, while organic cases revealed low, as well as high-pitched vibrations. This was one more interesting, objective way of differentiating between the two types of murmurs.

We have in our clinic a means of checking Bass' observation as to the frequency characteristics of organic and accidental murmurs. Our apparatus consists of a crystal microphone, a four-tube radio amplifier, and a loud speaker. The amplifier is equipped with seven stages of high pass filters. By means of this, we can tune the frequencies in or out, and in a very few minutes convince ourselves as to whether or not the murmur runs the full scale, or consists of only the high frequencies. This has proved a very valuable aid to diagnosis.

Many authors lay particular stress on the shortness of the functional murmur as its most characteristic feature. Some of us can state definitely that a given systolic murmur occupies only the first half of systole. On the other hand, many of us cannot make this distinction. Fortunately, we have a graphic means of accurately timing these murmurs in sound tracings. This is an objective means of obtaining a tracing, which not only gives us the time relationship, but also the frequency characteristics of a given murmur. We can definitely determine the duration of the murmur, and whether or not it occupies the whole of systole. It is obviously impractical to expect every physician to install the equipment for these graphic tests. However, if one man in a community interests himself in this type of work, he can be consulted at need. There are many times in the practice of medicine when we have to call in more aid than our five senses can give us.

In summing up the diagnostic features of accidental murmurs we find that they really present an imposing array. First, we have the history, which tells us that the condition is unassociated with infectious processes which might lead to endocarditis; or to symptoms pointing towards a congenital lesion. Second, we have the physical examination which covers the above listed characteristics. We also observe an absolute lack of the usual evidences of heart disease. These observations may be checked by the X-ray and electrocardiogram. Third, we have more specific tests as Maliner's adrenaline test, sound tracings, and the frequency characteristics as described by Bass. This recapitulation shows us that we really have as many means at our disposal for an accurate diagnosis of an accidental murmur as we have for most conditions in medicine.

Now let us turn to the question of rheumatic fever in children and see briefly what the diagnostic problems are. Rheumatic fever is an acute infectious disease manifesting itself in all the tissues of the body. This multiplicity of involvement gives rise to what we know as the rheumatic state. Considered in this light the diagnosis becomes easier, and many bizarre findings are explained. The most characteristic symptom of

rheumatic fever is, of course, the mild, fleeting, shifting, transient polyarthritis. The joints are rarely "hot" in the surgical sense and rarely show more than a mild hyperemia. These symptoms may be so vague as to leave doubt in the mind of the examiner. Shapiro has compiled a list of the characteristics of rheumatic joint pains in distinction to exhaustion or fatigue pains and other non-pathological symptoms. Through a personal communication, he has allowed me to include his table in this discussion.

TABLE B
THE DIFFERENCES BETWEEN NON-RHEUMATIC "GROWING PAINS" AND JOINT PAINS OF SUB-ACUTE RHEUMATIC FEVER
(M. J. Shapiro, M.D.)

	Non-Rheumatic "Growing Pains"	*Joint Pains of Sub-Acute Rheumatic Fever*
Time of Pain:	Soon after going to bed. Pain gone in morning. No pain on motion.	Worse on arising. Exaggerated on motion. Difficulty in walking; may cause limp. Pain present during most of day; disappears on getting warm in bed.
Location of Pain:	In muscles of thighs and legs. Child vague in pointing out site of pain.	In joints themselves. Child points to knees or ankles. Often complains of pain in joints of upper extremities also.
General Health:	Usually good.	Usually poor.
Other Signs of Rheumatic Activity:	Usually none.	Common; may have frequent nose-bleeds, unexplained fever, pallor, abdominal cramps, undernourishment. Evidence of carditis.
Objective Findings in Joints:	None.	Often joints are slightly swollen and hot.
Family History of Juvenile Rheumatism:	Uncommon.	Very common.

A carefully obtained history should help us appreciably either in strengthening our impression of rheumatic fever or in discarding this disease as the cause of the symptoms.

Physical examination then comes to our aid. As we have said above, rheumatic fever manifests itself in all tissues of the body. We must look for manifestations in the skin, eyes, brain, lungs, joints, heart, et cetera. The subcutaneous nodules are perhaps one of the most interesting tissue reactions. It is well to state at this time that these nodules must be searched for. They occur on the tendon sheaths and are brought out by flexion of the fingers, wrists, elbows, knees, ankles, spine, etc. When present, they appear as firm, pea-sized, subcutaneous nodules. Interestingly enough, they are sometimes more easily seen than felt. It is well to stress the fact that each joint must be flexed before they become apparent. Simple inspection of the patient will not reveal them.

Our attention has always been focused on the heart in rheumatic fever, so let us see what examination reveals. In the early infectious stage of the disease, three changes may occur. The first is a tachycardia ranging between 100 and 150. The second is accentuation of the pulmonic second sound. This sound is louder than the aortic second sound in children, but in rheumatic fever there is added a clear, snapping element. The third is the presence of a systolic murmur at the apex. This is functional in nature and caused by round cell infiltration of the mitral ring, which causes an inelasticity of this structure, resulting in regurgitation. This murmur frequently disappears during convalescence unless the valve leaflets become the site of actual vegetations.

After a careful history and physical examination, we turn to the laboratory. A complete blood examination reveals a polymorphonuclear leucocytosis and secondary anemia. Recently the sedimentation rate has received a good deal of attention. This is, of course, another excellent means of determining the presence of infection. The normal sedimentation rate is 8-10 mm. in one hour. In acute infectious processes this is increased to 20, 30 or more millimeters per hour. This has proved a valuable aid in following the convalescence from the disease. The variations from the normal follow very closely the course of the infection, as determined by the usual means of temperature, pulse, leucocytosis, et cetera. Frequent complete urine examinations are, of course, necessary as these indicate the presence or absence of renal involvement. Coburn has shown that real nephritis occasionally occurs, so we must, of course, be on the lookout for it.

Ever since Einthoven first invented the electrocardiogram this instrument has been used to give us detailed information. Swift has shown that this is perhaps the most delicate index of myocardial damage. He has shown that in rheumatic fever we see early changes in all the complexes. The prolongation of the P-R. interval, as evidence of atrio-ventricular block, is perhaps the most common early index of damage, but he also pays great attention to changes in all the other complexes.

The X-ray is, of course, of very little value in the early diagnosis of rheumatic fever because the changes in configuration are secondary to valvular changes which come later in the disease. However, it is well to take a six-foot plate and oesophogram as a matter of record when the case is first seen. These two procedures are invaluable as

indications of changes in the heart chambers secondary to valvular disease. When we have a picture of the situation in the early stages of the disease, we can more easily interpret slight changes as seen at a later date.

Now, by means of the history, physical examination, and laboratory tests, we should be able to make our diagnosis. It might be said that in the face of questionable symptoms, we must have definite findings upon physical examination, and laboratory work, before we are justified in making a positive diagnosis. This point of view is necessary because of the nature of our treatment. In other words, we are not justified in inflicting prolonged bed rest upon any child unless we are sure of our ground. But, once we have sufficient data for a correct diagnosis, we must stand firmly on our ground, and treat the condition properly. John Lovett Morse has shown definitely that the incidence of cardiac wrecks can be lowered by proper treatment.

The proper diagnosis is always the hardest part of the job and takes most of the time in this work. Each patient must be evaluated individually, as no set rules will yield the proper diagnosis. Great care is taken in this work because of the serious inferiority complexes which arise in a child who is unjustifiably labelled as having "heart trouble." The treatment follows generally prescribed lines. Bed rest, bed rest, and plenty of it is the most important item of treatment. Aside from this, salicylates and other sedatives for the relief of pain, diet and good nursing care are necessary.

As we all know, it is easy enough to keep a child quiet if he is sick. However, as soon as he feels better, it is practically impossible to keep him in bed in the home. The parents' sympathy becomes stronger than the doctor's advice, and the child is allowed to get up. Proper therapy means bed rest until the subsidence of the infection, which may be months. In order to furnish this, convalescent homes for rheumatic fever patients are springing up throughout the country. By this means the child is kept quiet and under medical supervision. Temperature charts, pulse charts, blood examinations and frequent electrocardiographic tracings enable the physician to follow the course carefully and regulate the child's activity. It is well known that children are ruled by example. Children in an institution are perfectly amenable to limitations of activity, because the condition is universal. His playmates are kept in bed, so he naturally feels it is all right. At home, on the other hand, he would quickly rebel, because everybody else in the household is up and around. Fortunately, we are awakening to this fact. By means of these institutions we hope to lower the incidence of heart disease, and the production of cardiac invalids who are helpless for decades.

Up to this point we have concerned ourselves chiefly with the differential diagnosis of the systolic murmurs of childhood, and the diagnosis of rheumatic fever. The natural question then arises as to how we shall treat rheumatic heart disease. By this group, I mean the children that emerge from their infection with damaged hearts. In this group you are faced with the same problems confronting the internist dealing with heart disease in adults. The heart is then a damaged pump which must be treated accordingly. Bed rest and digitalis are used to rest the heart, and keep it under control. Quinidine is used to bring about normal rhythm, and diuretics are used to combat peripheral edema and ascites.

It is well to bear in mind that these children sometimes make remarkable recoveries. Pathologically, we are dealing with grape-like masses of vegetations on the valve leaflets. These masses produce stenosis and regurgitation mechanically by preventing apposition of the valve cusps. However, when these vegetations heal, retract and scar over, very little may be left to mechanically interfere with heart disease in youths as compared to adults. It has been very gratifying in our clinic to observe the amazing recovery which takes place over a series of years. We have several children who show practically normal cardiac outlines at the present time, who were previously diagnosed as having severe mitral disease. It is the fact that you are dealing with the early stages of disease that makes work with children such an interesting one.

Summary

1. A brief discussion of the accidental murmur is given.

2. The diagnostic criteria of the systolic murmurs of childhood are enumerated.

3. A table showing the essential differences between fatigue pains and rheumatic pains is presented.

4. A plea for accuracy of diagnosis is entered, as correctness of judgment leads to proper therapy whether it be bed rest and digitalis or complete reassurance as to the absence of heart disease.

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Spontaneous Dislocation of the Hip Joint in Children: Its Cause and Prevention*

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IN 1876, John Hilton, in his lectures on "Rest and Pain," made a plea to the members of the medical profession to recognize and prevent spontaneous or pathological dislocation of the hip joint. He said, "I hope surgeons may be induced to try to diminish to some extent, if not to remove completely, that extreme deformity which they so often meet with in cases of hip disease with dislocation of the thigh bone, provided they see them before Nature has formed a substituted joint or a consolidated ossific union between the ilium and the thigh bone in an abnormal position."

Dislocation of the hip joint may be classified as congenital, traumatic, and spontaneous or pathological. Numerous articles have appeared in medical literature concerning congenital and traumatic dislocations but comparatively little space has been given to the discussion of the spontaneous group. Congenital dislocation is the most frequent type, while spontaneous is more common than traumatic dislocation.

Spontaneous dislocation of the hip joint usually develops during the age period of childhood as a complication to hip joint disease. It is a preventable deformity and when once established it presents a serious disability.

Hilton recognized that the position of flexion, adduction and internal rotation of the affected extremity was a dangerous one since dislocation was caused from this attitude if measures were not employed to prevent it. (Fig. II). He stated, "In hip joint disease, the femur is slightly bent upon the abdomen, and somewhat adducted, and this occurs from the combined action of the flexors and adductors, which compels the thigh-bone to follow the mean direction of the muscular forces. There is a constant law that when a joint is inflamed, the movable part of it is obedient to the more powerful muscular action." Early in the history of infections of the hip joint, the affected extremity may be held in flexion, abduction, and external rotation. (Fig.I.). As the disease progresses, the position usually changes to one of flexion, adduction and internal rotation. (Fig. II.). This position of the affected extremity is described as "the position of instability." It is a dangerous position and one which is productive of spontaneous dislocation. The most important factor in the development of the dislocation is the "position of instability" and not destruction of bone, cartilage or ligaments.



FIGURE 1

Child with early active tuberculosis involving the right hip joint. Note how the boy protects the affected extremity by instinctive splinting. The affected extremity is held in flexion, abduction and external rotation. This position usually changes to flexion, adduction and internal rotation or the "position of instability" (see Figure 2).



FIGURE 2

Child with infectious arthritis involving the left hip joint. The child lay in bed for many weeks with the affected hip held in flexion, adduction and internal rotation. Note that the hip dislocated because the "position of instability" was not changed to the "position of stability" early in the history of the disease.

In 1926, R. Watson Jones, of Liverpool, demonstrated that the mechanism of the production

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of spontaneous dislocation is a derangement of the normal action of the muscles surrounding the hip joint and is not dependent on lesions of bone, cartilage, or ligaments. The normal muscular arrangement about the hip joint may be altered by (1) muscle spasm, (2) flaccid paralyses and (3) muscle inco-ordination. Spontaneous dislocation of the hip is not infrequently observed as a complication of (1) infectious diseases of the hip, (2) infantile paralysis, and (3) spastic cerebral paralysis.

Hilton stated, "the acetabulum in a child is very shallow compared with that of an adult. It thus offers greater facility for displacement. This, I apprehend, may be the reason why dislocation of the thigh-bone occurs so frequently in cases of hip joint disease at an early period of life." Muscle pull and gravity may easily lever the head of the femur from the acetabulum if the affected extremity is maintained in the "position of instability" or in flexion, adduction and internal rotation. Jones stated that, "in this position the head of the femur is only partly covered by the postero-inferior rim of the acetabulum, its shallowest rim, so that there is little bony obstacle to dislocation. The greater part of the head is in contact with the capsular ligament, which is also comparatively weak at this part (ischiocapsular fibers)."

In 1928, the writer reported 28 cases of spontaneous dislocation which were observed over a period of five years. The dislocation complicated infectious disease of the hip in 20 patients, infantile paralysis in four, and spastic cerebral paralysis in four.

Derangement of the normal action of the muscles controlling the hip joint in infectious diseases of the hip is the result of the development of muscle spasm. Acute hematogenous osteomyelitis (Fig. III.), tuberculosis, gonorrheal





FIGURE 3—a-b

Radiographic studies of a child with osteomyelitis of the neck of the femur and purulent hip joint. Early in the course of the disease the affected extremity was held in the "position of stability" in which position the head of the femur can not dislocate from the acetabulum. (a) The position changed to flexion and adduction, or, to the "position of instability" and the hip joint dislocated. (b) If the "position of stability" had been maintained by skin traction or a plaster of Paris spica the dislocation could have been prevented.

arthritis, atrophic arthritis or Still's disease, metastatic infectious arthritis from a remote source of infection such as mastoid or upper respiratory infection, acute rheumatic fever (Fig. IV.), and septic arthritis of the hip joint complicating the contagious diseases of childhood frequently present muscle spasm with a flexion and adduction de-



FIGURE 4

Radiographic study which shows a spontaneous dislocation of the left hip. The child was normal and well until the age of ten years when he was confined to bed for many weeks because of acute rheumatic fever which affected multiple joints. The left hip joint was affected and the boy had very little pain because the left lower extremity was supported with pillows in the position of comfort, or, in flexion, adduction and internal rotation. When the boy was ready to leave the hospital he was unable to walk. Examination revealed a spontaneous dislocation of the left hip joint which occurred sometime during the period of bed rest. The above radiogram was taken six years later. The malformation of the femoral head and acetabulum is the result of abnormal distribution of stress and strain and not destruction from the previous infection. The dislocation could have been prevented if the "position of instability" had been changed to the "position of stability" during the early phase of the acute rheumatic fever.

formity of the affected hip. A painful hip joint which is immobilized by the patient in the "position of instability" for comfort should always be protected against spontaneous dislocation by changing the position to one of stability or extension and abduction. The child may instinctively place the affected thigh upon the opposite extremity for support and the mother may place a pillow under the knee for comfort and relief of pain. The physician, however, should relieve the child of pain and discomfort by placing the affected extremity in traction or in a plaster of paris hip spica with the extremity in extension and slight abduction which is the optimum position and the "position of stability." It is mechanically impossible for the femoral head to leave the acetabulum when the lower extremity is immobilized in this position.

The treatment of the various infections affecting the hip joint will not be considered in this brief paper since each patient will present individual problems. The therapy will vary from conservative to radical measures depending upon the nature of the underlying pathology. There is one problem in the therapeutic program, however, which these patients have in common and that is the prevention of spontaneous dislocation of the affected hip. The physician can prevent the development of this serious complication if he will recognize the danger of the "position of instability" and appreciate the importance of mechanical factors in the treatment of infectious diseases of joints.

Infectious diseases of the hip which have an insidious onset with the formation of intra-articular and extra-articular adhesions and slight or no muscle spasm and deformity are not in danger of dislocation. When muscle spasm develops and causes a derangement of the normal action of the surrounding muscles with the development of the "position of instability," then, spontaneous dislocation is imminent.

Dislocation of the hip may result from residual paralyses of anterior poliomyelitis involving the muscles which surround and control the hip joint. The "position of instability" in this group of patients is dependent upon the formation of contractures and habitual postures resulting from muscle imbalance. When the extensor, abductor, and external rotator muscles are paralyzed there is a disturbance of normal muscle balance which favors the production of a flexion, adduction, and internal rotation deformity. The normal muscles are unopposed and without treatment they contract and undergo an actual structural shortening. Contractures of the normal and stronger unopposed muscle groups develop insidiously. The capsule gradually stretches as the femoral head is subluxated and levered from the acetabulum by the "position of instability" and gravity. Paralytic dislocation can be reduced and re-dislocated with ease and without pain. The dislocation is a serious handicap since most of the patients have residual paralyses affecting other joints of the extremities as well as abdominal paralyses with resulting spinal curvature. Many of the associated deformities are even more serious problems than the dislocation.

In 1932, Elzinga and Key reported a study of paralytic dislocation of the hip in 25 patients with residual paralyses of anterior poliomyelitis. They observed that, "the position of flexion, adduction, and internal rotation is a vicious one in severely paralyzed hips. Flexion and adduction deformities should be prevented by conservative methods and these patients should acquire the habit of sitting and sleeping with the knees separted, as we believe that abduction is even more important than extension in preventing dislocation. If this plan is consistently adhered to, we feel that relatively few paralyzed hips will dislocate regardless of the distribution of the paralysis."

Derangement of the normal action of the muscles controlling the hip joint not infrequently results from spastic cerebral paralysis. The patient usually presents a spastic hemiplegia or spastic paraplegia. The affected muscles are not actually paralyzed; the muscle tone and reflexes are increased. Normal muscular actions are deranged because the sense of muscular co-ordination is either partially or completely lost. The stronger groups of muscles determine the position of the deformities of the joints of the affected extremities. Flexion, adduction and internal rotation or the "position of instability" is the usual hip joint deformity and occasionally results in spontaneous dislocation. This group of patients should be treated by muscle training and education of the sense of muscle co-ordination so that the weaker groups of muscles will oppose the tendency of the stronger groups to produce the dangerous deformity. Abduction, extension and external rotation exercises and proper splinting at night may prevent the development of deformity and dislocation. Occasionally the stronger groups of muscles resist all conservative measures which aim at the restoration of muscle co-ordination. Sectioning of the obturator nerve and myotomies of the con-

(Continued on Page 287)

Empyema of Children*

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IN THIS discussion the term "primary empyema" is used to indicate an empyema that has been preceded by pneumonia or at most by an acute infection of the upper respiratory tract which has been followed by pneumonia. The term "secondary empyema" is used to indicate an empyema which results from a pulmonary complication of some preceding disease, such as scarlet fever or peritonitis.

In a review of eighty-four consecutive cases of acute empyema, in which the patients were children, certain facts of interest have been discovered. In some of these cases, the empyema affected patients who were under the care of the pediatric department of the clinic from the beginning of their illness; but in most of these cases, the children were brought to the clinic for examination and treatment because of a diagnosis or suspicion of pyothorax.

It is of interest to note that the condition was found to be most frequent among children whose ages ranged from one and a half to seven years. (Table 1).

As one would expect, primary empyema is far more common than is secondary empyema. There were seventy-one cases of empyema following primary pneumonia, as compared to thirteen cases of empyema which affected patients who had had some illness prior to development of pulmonary disease. (Table 1).

No figures are available concerning the organisms responsible for the pulmonary disease which preceded the empyema. Bacteriologic study of the fluid in the chest revealed some striking facts. (Table 1). The organisms which were isolated included pneumococci of the various types; streptococci, both hemolytic and viridans; staphylococci, gram-negative and gram-positive bacilli; and bacteroides. In primary empyema, only pneumococci were found in the fluid in fifty of seventy-one cases and it is remarkable that the pneumococcus, type 1 was found in forty of the fifty cases. It is reasonable to assume that the organism which was responsible for the preceding pneumonia in these forty cases was the same as that which was found in the pleural fluid. Moreover, type 1 antibody solution is efficacious in type 1 pneumonia. Therefore, it seems reasonable to assume, also, that if type 1 antibody solution had been administered to these children in the course of the pneumonia, the children would have had more than a 50 per cent possibility of benefiting thereby. This, it seems, would have been true even though the type of organism could not be determined because of lack of facilities.

Bacteriologic study of the pleural fluid in the cases of secondary empyema revealed a variety of organisms, but by far the most frequent offender was the hemolytic streptococcus, which was found alone in six of the thirteen cases, and in several of the mixed infections. The point has been made, and recently reiterated by Bohrer, that empyema that is caused by the streptococcus usually is only part of a severe infection which

TABLE 1
PRIMARY AND SECONDARY EMPYEMA; AGE INCIDENCE AND BACTERIOLOGIC FINDINGS

Age	Pneumococcus I	Pneumococcus II	Pneumococcus III	Pneumococcus IV	Streptococcus II.	Streptococcus V.	Staphylococcus	Mixed	Sterile	No Record	Total	Deaths
PRIMARY												
0 to 6 Mos.	..	..	..	..	..	..	..	..	1	..	1	1
7 to 12 Mos.	..	1	..	1	..	..	..	..	..	..	2	1
13 to 18 Mos.	..	..	..	..	..	..	1	..	..	..	1	..
19 to 24 Mos.	6	..	3	..	1	..	..	..	..	..	10	2
3 Years	4	..	..	1	..	..	..	1	..	1	7	..
4 Years	5	..	..	..	..	1	..	..	..	2	8	1
5 Years	5	..	1	..	1	..	1	..	..	1	9	..
6 Years	7	..	..	..	1	..	..	..	1	..	9	..
7 Years	3	1	..	..	1	..	..	..	..	1	6	..
8 Years	1	..	..	1	1	..	..	..	..	..	3	..
9 Years	..	..	..	..	..	..	..	..	1	..	1	..
10 Years	1	..	..	..	..	..	..	..	1	..	2	..
11 Years	3	..	..	..	..	..	..	..	..	..	3	..
12 Years	1	..	..	..	..	..	..	..	..	..	1	..
13 Years	2	..	..	1	..	..	..	..	1	..	4	..
14 Years	2	..	..	..	2	..	..	..	..	..	4	..
Total	40	2	4	4	7	1	2	1	5	5	71	5
SECONDARY												
0 to 6 Mos.	..	..	..	..	..	..	..	..	..	..	..	..
7 to 12 Mos.	..	..	..	..	..	..	..	..	..	..	..	..
13 to 18 Mos.	..	..	..	..	..	..	..	..	..	..	..	..
19 to 24 Mos.	..	..	..	..	..	..	..	..	..	..	..	..
3 Years	..	..	..	..	1	..	..	..	1	..	2	1
4 Years	..	..	..	..	1	..	..	1	..	..	2	1
5 Years	..	..	1	..	..	..	..	..	..	..	1	1
6 Years	..	..	..	..	1	..	..	1	..	..	3	2
7 Years	..	..	..	..	1	..	..	..	..	..	1	..
8 Years	..	..	..	..	1	..	..	..	..	..	1	..
9 Years	..	..	..	..	..	..	..	..	..	..	..	..
10 Years	..	..	..	..	1	..	..	1	..	..	2	1
11 Years	..	..	..	..	..	..	..	..	..	..	..	..
12 Years	..	..	..	..	..	..	1	1	..	..	2	1
13 Years	..	..	..	..	..	..	..	..	..	..	..	..
14 Years	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	..	1	..	6	..	1	4	1	..	13	7

*Prepared especially for the Pediatric Number of THE JOURNAL-LANCET.

†Section on Pediatrics, The Mayo Clinic.

involves not only the lungs and pleural cavity, but also many other parts of the body. The mortality of this type of empyema is high. This is borne out by our figures. In seventy-one cases of primary empyema, there were five deaths, a mortality of about seven per cent; in thirteen cases of secondary empyema, there were seven deaths, a mortality of more than 50 per cent.

The length of time that elapsed between the onset of pneumonia and the institution of treatment for the resultant empyema is of significance in three respects: First, it is evident that empyema may develop early in the course of pulmonary disease. In three of the cases in this series the empyema developed during the first week of the illness, and in seven cases, it developed in the second week of the illness. Second, in most of the cases the empyema will be discovered and treated two to four weeks after the onset of the illness. Third, it was found that in a number of cases the empyema had not been treated until as long as four months after the onset of the illness. This last fact may be accounted for on the basis of failure to suspect the presence of pus in the pleural cavity, but more frequently it is the result of failure to obtain pus by exploratory thoracentesis, in cases in which the presence of pus is not only suspected but is rather certain. These statements apparently hold true for the cases of secondary empyema in this series, as well as for the cases of primary empyema. (Tables 2 and 3).

It is not the purpose here to discuss the indications or advantages of so-called closed and open treatment of acute empyema which affects children. However, a study of the type of treatment which actually was carried out in this series of cases is significant (Table 4). In the eighty-four cases, aspiration was employed alone in six. There are two reasons for this. The first is that in a few cases, aspiration alone sufficed to clear up the condition. In the second place, some of the patients were so seriously ill at the time that aspiration was the only treatment which could be

TABLE 2
PRIMARY EMPYEMA

	Weeks																
Organisms in Pleural Fluid	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	Totals
Pneumococcus I	2	5	10	12	6	3	1	..	..	..	..	..	..	..	1	..	40
Pneumococcus II	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2
Pneumococcus III	..	..	2	1	..	..	..	..	1	..	..	..	..	..	..	..	4
Pneumococcus IV	..	1	1	1	..	..	..	1	..	..	..	..	..	..	..	..	4
Streptococcus hemolyticus	..	1	4	..	..	..	..	1	1	..	..	..	..	..	..	1	8
Streptococcus viridans	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Staphylococcus	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	2
Mixed	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Sterile	1	..	1	2	1	..	..	..	..	..	..	..	..	..	..	..	5
No record	..	..	1	2	..	1	..	1	..	..	..	..	..	..	..	..	5
Totals	3	7	21	20	7	4	1	3	3	..	..	..	..	..	1	1	71

TABLE 3
SECONDARY EMPYEMA

	Weeks																
Organisms in Pleural Fluid	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	Totals
Pneumococcus I	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pneumococcus II	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pneumococcus III	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Pneumococcus IV	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Streptococcus hemolyticus	1	2	..	1	..	..	..	1	..	..	1	..	..	..	..	..	6
Streptococcus viridans	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Staphylococcus	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Mixed	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Sterile	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
No record	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	1	3	3	1	..	1	..	2	..	..	1	..	..	..	1	..	13

TABLE 4
TREATMENT OF ACUTE EMPYEMA

	Primary				Secondary				Deaths	
	Aspiration Only	*Closed Drainage Only*	*Open and Closed Drainage*	*Open Drainage Only*	*Aspiration Only*	*Closed Drainage Only*	*Open and Closed Drainage*	*Open Drainage Only*	*Primary*	*Secondary*
Pneumococcus I	..	18	11	11	..	..	..	..	1	..
Pneumococcus II	1	..	1	..	..	..	..	..	1	..
Pneumococcus III	1	1	1	1	..	..	..	1	1	1
Pneumococcus IV	..	1	2	1	..	..	..	..	..	..
Streptococcus hemolyticus	..	3	2	2	1	2	1	2	1	2
Streptococcus viridans	..	..	1	..	..	..	..	..	..	..
Staphylococcus	..	1	..	1	..	1	..	..	..	1
Mixed	..	..	1	..	1	..	2	1	..	2
Sterile	2	1	..	2	..	..	..	1	1	1
No record	..	1	4	..	..	..	..	..	..	..
Total	4	26	23	18	2	3	3	5	5	7

carried out with safety. Some of the patients died.

In a considerable number of the remaining cases, that is, in twenty-six cases of primary empyema and in three cases of secondary empyema, the treatment consisted of closed drainage only. This usually consisted in the resection of a small portion of one rib and the insertion of a tube through the periosteum, for drainage and irrigation. In cases in which this procedure sufficed, nothing else was done, but in those cases in which it was insufficient, resection of ribs and open drainage of the pleural cavity was carried out. In these cases the empyema was treated by both closed and open methods. Lastly, in eighteen cases of primary empyema and in five cases of secondary empyema, the condition was treated by open operation only. Many of these were cases in which treatment had been delayed and in which convalescence was thereby prolonged.

A brief review of the cases of secondary empyema is of interest, since they form the most serious problem of acute empyema of children (Table 5). In four of these cases, the empyema followed contagious diseases; in four cases, it followed appendicitis, and in three cases there was a preceding peritonitis. In two of these cases, the empyema was a complication of pulmonary conditions other than pneumonia; in one case, it was a complication of staphylococcus septicemia; in one case it occurred after a nephrosis, and in another case it followed an operation. The finding of the hemolytic streptococcus in these cases indicates a grave infection. The mortality (seven of thirteen patients, who had this type of empyema, died) substantiates the seriousness of this form of acute empyema.

TABLE 5
SECONDARY EMPYEMA OF CHILDREN

Age, Years	*Initial Disease*	*Pneumonia*	*Organism*	*Outcome*
8	Scarlet fever	+	Streptococcus hemolyticus	Recovered
10	Hereditary syphilis; scarlet fever	+	Streptococcus hemolyticus	Died
3½	Measles	+	Streptococcus hemolyticus	Recovered
4	Influenza	+	Streptococcus hemolyticus	Recovered
10	Appendicitis	+	Streptococcus hemolyticus Pneumococcus III	Recovered
4	Appendicitis; peritonitis	+	Streptococcus hemolyticus Gram-positive bacilli Gram-negative bacilli	Died
6	Appendicitis; peritonitis	+	Streptococcus hemolyticus Gram-positive bacilli Gram-negative bacilli	Died
12	Appendicitis; peritonitis	+	Streptococcus viridans Bacteroides	Recovered
5	Bronchiectasis	0	Pneumococcus III	Died 3 yrs. later
3	Foreign body; pulmonary abscess	+	Sterile	Died
12	Osteomyelitis; staphylococcic septicemia	+	Staphylococcus	Died
7	Nephrosis	0	Streptococcus hemolyticus	Recovered
6	Extrophy of urinary bladder; operation	+	Strentococcus hemolyticus	Died

TABLE 6
COMPLICATIONS IN EIGHTY-FOUR CASES OF EMPYEMA OF CHILDREN

Complication	*Cases in Which Found*
Otitis media	0
Mastoiditis	1
Pneumonia	2
Mediastinitis	3
Bilateral empyema	1
Pulmonary abscess	5
Pericarditis	3
Tonsillitis	2
Measles	1

The complications which were encountered in this series of cases are listed in Table 6. The ears and mastoid cells were involved most frequently. Pulmonary conditions, including pneumonia, bilateral empyema, mediastinitis, and pulmonary abscesses, were of frequent occurrence. Pericarditis, which occurred in three of the cases, is of very grave import.

Conclusions

1. Eighty-four cases of acute empyema of children are reviewed.

2. In approximately 70 per cent of the cases, the empyema affected patients who were between the ages of eighteen months and seven years.

3. In seventy-one of the eighty-four cases, the empyema was primary, that is, it affected patients whose previous illness consisted of pneumonia only. In thirteen cases, the empyema was secondary, that is, it occurred subsequent to some condition, such as scarlet fever or peritonitis.

4. In primary empyema, pneumococcus type 1 was isolated in pure culture from the pleural fluid in 80 per cent of the cases. This may constitute some reason for employment of type 1 pneumococcus antibody solution in treatment of pneumonia of children, even if the type of infective organism cannot be determined.

5. Streptococcus hemolyticus was the organism which was isolated most frequently from the pleural fluid in the cases of secondary empyema.

6. Empyema may develop during the first week of pneumonia.

7. Failure to obtain pus by exploratory thoracentesis is probably the chief reason for delayed treatment of empyema of children.

8. The mortality was approximately seven

times as high in secondary empyema as it was in primary empyema.

9. The mortality in primary empyema is greatest among children who are less than two years of age; after the age of two years, it is extremely low.

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Spontaneous Dislocation of the Hip Joint in Children: Its Cause and Prevention

(*Continued from Page 283*)

tracted muscles are indicated at times in this group of patients.

Treatment of the established deformity will not be considered in this brief paper. Each patient will present individual problems. Prevention of the disability is the treatment most desired and the one which the writer has attempted to emphasize.

Conclusions

1. Spontaneous dislocation of the hip is a frequent complication of diseases affecting the hip joint in children.

2. Spontaneous dislocation of the hip is a preventable deformity.

3. The mechanism of the development of the dislocation is a derangement of the normal action of the muscles surrounding the hip joint.

4. The normal action of the muscles may be disturbed by (1) muscle spasm, (2) muscle paralyses, and (3) muscle inco-ordination.

5. The production of the dislocation is not dependent upon destruction of bone, cartilage or ligaments.

6. Flexion, adduction, and internal rotation of the hip should be considered as a dangerous and vicious attitude.

7. Physicians should always guard against the "position of instability" which is productive of spontaneous dislocation of the hip joint.

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BOOK NOTICE

HANDBOOK FOR STUDENTS

Clinical Case-Taking, by GEORGE HERRMANN, M.D., Ph.D.; cloth, 2nd edition, 98 pages, 6 illustrations; Saint Louis: The C. V. Mosby Company: 1934. Price, $1.50.

This work, intended for the medical student rather than the graduated practitioner, was first offered in 1927, and is presented in this edition in a considerably revised form. The author, who is professor of clinical medicine in the University of Texas, reveals in his somewhat aggressive introduction that he is a schoolman with unflexing convictions about exhaustive thoroughness in study and careful attention to detail.

The work follows the systemized plan of the earlier guide, presenting first the administrative data necessary for good clinical records, going next to the present illness, the social, past, family, and marital histories, the physical examination, and the laboratory examination. HERRMANN shows himself to be insistent upon the most minute details in presenting his conception of the ideal case records: an insistence that in this particular field would certainly do no harm.

A NEW GUIDE TO PLASTIC SURGERY OF THE NOSE

Corrective Rhinoplastic Surgery, by JOSEPH SAFIAN, M.D., illustrated by JOSEPH TAMERIN, M.D.; first edition, cloth, 218 pages and 242 illustrations; New York: Paul B. Hoeber, Inc.: 1935. Price, $9.

Plastic surgery, which differs from all other surgical procedures in that it ordinarily seeks to correct no pathological or traumatic ills, has a curious historical affinity to orthopedic surgery: both received their greatest impetus directly from the World War.

Dr. Safian, who is the attending plastic surgeon at the Sydenham, Beth David, and Jewish Memorial Hospitals in New York City, has written what amounts to a careful, restrained, and eminently conservative disquisition on plastic surgery as it deals with malformations of the nose and chin, backed by many photographic testimonies of success from his own practice. He gives full tribute to Jacques Joseph of Berlin, who originated the intranasal operations for the correction of nasal deformities, and devised most of the instruments now in use in rhinoplastic procedure—instruments which Safian himself uses in practice, and includes in the plates of this volume.

The work describes fully such conditions as "saddle nose," fractures and dislocations of the nose, deviations of the nose, hypertrophies of the bony portion of the nose, etc., and presents under each condition the proper surgical technique for its correction. The work has an introduction by Herman Pomeranz, M.D., and a good index. There is no bibliography.

The Romance of Exploration; no author; cloth, 160 pages, illustrated; New York: Burroughs, Wellcome & Company: 1934. No price.

This volume, while presented frankly as an expression of good will by the great English pharmaceutical and medicament firm of Burroughs, Wellcome & Company, is nevertheless well worthy of editorial mention. It traces most of the great explorative expeditions the modern world has known, and unrolls the story of Britain's mighty empire-building giants of the last century. The volume is printed in England, and its pages are excellently illustrated with many halftones. The fact that nearly half of the book is devoted to advertising Burroughs, Wellcome products does not detract from its historical usefulness.

A CURIOUS BROCHURE OF UNUSUAL INTEREST

The Care of the Aged, the Dying, and the Dead, by ALFRED WORCESTER, M.D., Sc.D.; 77 pages, paper, first edition: Springfield, Illinois, and Baltimore, Maryland: Charles C. Thomas: 1935. Price, $1.00, postpaid.

This little volume, with its unconsciously fatalistic title, is well worth the reading by any physician, for it treats of three successively related conditions in the life cycle of the human individual in a manner not often approached by any medical text. The author, who is the Henry K. Oliver Professor of Hygiene in Harvard University, has collected three of his lectures, each comprising a natural one-third of the book as indicated in the title.

The last, called *The Care of the Dead,* is most interesting because its contents will be new to most physicians. Dr. Oliver unleashes a few well-chosen arrows against the pomposities of modern funeral practices, and shows clearly that both logically and Scripturally, cremation is the ideal method of caring for the dead.

Scarcely less valuable is the second part of the book: *The Care of the Dying.* After a few brief rules for the patient's comfort and security, Dr. Oliver presents many actual cases of dying humans, several of whom communicated their emotions to watchers until the last spark of life had fled. The last words of the great English anatomist, William Harvey, are significant: "If I had strength enough to hold a pen, I would write how easy and pleasant a thing it is to die."

A NEW WORK ON BIOCHEMISTRY

A Textbook of Biochemistry, edited by BENJAMIN HARROW, Ph.D., and CARL P. SHERWIN, M.D., Sc.D.; cloth, first edition, 797 pages and 52 illustrations; Philadelphia: The W. B. Saunders Company: 1935. Price, $6.

Any physician who has kept even casually abreast of recent advances in medicine realizes how constantly biochemistry has in recent years impinged upon modern medical theory and practice. The work of Banting, of McCollum, of Kendall, and Steenbock, has been made evident even to the laity.

This work is valuable in that its inclusion is catholic and even unusual for the field that it covers. It commences with the cell, discusses the carbohydrates, the neutral fats and related substances, the sterols, the proteins, and so to the end, in logical sequence of study. The physician will find it of greatest value when the volume deals with nutrition, the vitamins, enzymes, immunochemistry, carriage of the blood gases, respiratory metabolism, the bones and teeth, the chemistry of muscle, the biochemistry of the brain, and particularly, the hormones.

Each chapter is the work of an authority in the field, among whom may be mentioned McCollum of Johns Hopkins, Bloor of the University of Rochester, Cori of Washington University, Ferguson of Alabama, and others. As for the editors, Dr. Harrow is associate professor of chemistry in the College of the City of New York, and Dr. Sherwin is a member of the staff of Saint Vincent's Hospital in New York City.

The book is an exhaustive source on the more imposing elements of modern biochemistry, and can be recommended to any physician interested in the field.

Hygiene for Freshmen, by ALFRED WORCESTER, A.M., M.D., Sc.D.; first edition, cloth, 154 pages; Springfield, Illinois, and Baltimore, Md.: Charles C. Thomas: 1934. Price, $1.50.

Persons acquainted with college textbooks of hygiene will be agreeably surprised by the briefness and adequacy of this book. It is specifically adapted to the short term course in hygiene as presented in many colleges as a required subject. Written in an informal style, the subject is surveyed so as to meet the needs and hold the interest of the average college freshman. Particular emphasis is placed on certain subjects to gain this end. Yet, in places, for instance, gland structure and physiology, it is hard to justify seemingly disproportionate weight and detail. The same criticism might be voiced in regard to the emphasis placed upon masturbation and homosexual relationships in a chapter on reproduction.

Certain palpable inaccuracies of factual material are stated as, "Insulin as a cure for diabetes." There is in general a unique freedom from unnecessary technical terms and details without any intrinsic impairment. Assuming, on the part of his reader, average intelligence and a not too highly adequate background in biology, the author presents his subject without talking down to or below the level of the average student enrolled in "freshman hygiene." It may well stimulate interest in further more detailed study of hygiene. The chapter devoted to mental hygiene demonstrates a common sense viewpoint and discussion in keeping with the character and purpose of the book.

This book could not have been written except by a teacher with years of contact with college freshmen and a keen appreciation of their needs, interests, and reactions to modern "basic" courses in hygiene.

—Robert G. Hinckley, M.D.

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IMMUNIZE NOW: STAMP OUT DIPHTHERIA!

All the world loves a hero. The public lavishes its admiration on the man who, when all seems to be lost, steps in and, preferably at the risk of life and limb, saves the day.

No one knows this kind of hero worship better than the practising physician. Many of the emergencies in which he is called upon to give of his best, are unavoidable. But some are not. There are still too many people who wait till the last possible moment before calling in the doctor, and then expect him, with all the odds against him, to perform a miracle.

Such faith is flattering, but it is rather hard on the physician. It is also rather hard on the patient.

There is another kind of faith—a faith built on mutual understanding and co-operative effort. This is the faith that underlies the application of all preventive medicine, that sets doctor and layman working together to forestall emergencies.

As every doctor knows, this co-operation is not always easy to obtain. Prevention is so much less spectacular than cure. It sticks less in the public eye. The famous dash to Nome, with the diphtheria anti-toxin, was front page news all over the world. The immunization of infants in physicians' offices passes unnoticed, except by those immediately concerned.

Physicians agree that the chief obstacles to diphtheria immunization are the ignorance and apathy of parents. Apathy can be shaken and ignorance taught. Calamity will do it, but calamity is a rude awakener and a harsh teacher. Education, too, will do it—more slowly but more completely. We must hammer away until every parent realizes that immunization is positive protection against diphtheria.

May Day—Child Health Day is to be devoted largely to diphtheria immunization plans for 1935. Here is a chance for physician and layman to get together and develop some of that mutual understanding and co-operative effort, for the sake of the children.

AMERICAN CHILD HEALTH ASSOCIATION

CONTAGIOUS DISEASE PREVENTION IN PRIVATE PRACTICE

Due to the emphasis and publicity which has been given to immunization, hygiene, early diagnosis, isolation and treatment of the more common communicable diseases which occur in children, a general decline has occurred during the past twenty years in the death rate from diphtheria, measles, scarlet fever, pertussis and small pox. During this same period of time, however, no change has taken place in the mortality from these diseases in the period of infancy and early childhood.

If we, in private practice, would follow a more

systematic program of contagious disease prevention during infancy, we would, thereby, reduce infant and pre-school mortality and at the same time, we would keep the administration of preventive procedures in the hands of physicians, leaving to schools and health agencies, the educational phases which are properly their domain.

In the case of diphtheria, Godfrey has shown that when over 50 per cent of the infants in a community are immunized, this disease becomes almost extinct. Park has well said, "The baby needs immunization most and is annoyed by it the least."

The classical belief that infants are immune to and are little effected by infectious disease has been questioned recently. It seems likely that many babies escape infection merely because of their relative isolation rather than their immunity. In the well baby, whose hemoglobin is normal, small pox vaccination should be completed before the third or fourth month. In diphtheria, immunization should be given at the age of five to seven months, followed in ninety to one hundred and twenty days by the Schick test. Scarlet fever immunization usually causes very little reaction if administered before the age of two years and particularly if three minims of ephedrin are added to the material when it is injected. Records on over 20,000 susceptible individuals indicates that immunity to scarlet fever endures for several years when proper doses of the toxin are given. Since in the case of measles 65 to 70 per cent of the deaths occur under the age of four, the use of human serum within six days after the time of exposure, should be a routine procedure. McKahn has simplified this even further by demonstrating that the extract of human placenta contains measles immune substances. This is now distributed commercially in individual doses as "Human Globulin."

Practically 90 per cent of whooping cough disease occurs in the first four years of life, and repeated attempts have been made to perfect a vaccine for the prevention of this disease. Although Sauer's and Frawley's vaccines afford some hope, if given early in life and months before exposure takes place, nevertheless, their value has not been finally established. Excellent results have followed the use of 50 to 100 c.c. of Convalescent Pertussis Serum given shortly after exposure or early in the course of the disease. If we could universally adopt a planned schedule of immunization to be completed early in the life of the child we would be rendering an improved service to our clientele.

E. S. Platou, M.D.

THE DAKOTA MEETINGS

The time is close at hand for the annual meetings of state medical associations that the Lancet serves.

This year South Dakota leads off with a May 13, 14 and 15, dating at Pierre, devoting the first to Council and House of Delegates proceedings, and the other two to clinics and scientific papers. The North Dakota association meets at Minot and in like manner the House of Delegates there dispose of preliminary matters of business on the 26th of May, leaving the 27 and 28, for the scientific program. It is quite unnecessary that we should comment on the programs as we have already published them in our April 15 issue and they speak for themselves and their sponsors in a most commendatory manner.

A. E. H.

ONE HUNDRED THOUSAND HEALTH CENTERS

Physicians are guardians of human life and health. By improving medical education, by raising the requirements for admission to the guild, and by actively promoting research, the medical profession ceaselessly endeavors to perfect the efficiency with which this responsibility is discharged. For these and also for other reasons, the profession is relied upon by the public for the discovery and administration of procedures which alleviate or prevent illness.

Medical research has been particularly productive during the past few decades, and as a result of the intellectual effort of certain of our colleagues the administration of some of the newly discovered therapeutic or prophylactive measures has been greatly simplified. For example, the technique of diphtheria immunization now is equivalent to that of a hypodermic injection.

This unpatented accomplishment which makes diphtheria immunization available to all, however, only partially solves the problem of eradicating diphtheria for there remains the additional tremendous task of inducing a considerable part of the population to take advantage of this specific protection.

The time and energy spent by the practitioner of medicine in the care of his patients and in keeping himself informed reduces the time available for enlightening his clientele relative to the merits, saftey, and advisability of contagious disease prevention. Physicians, therefore, need assistance in bringing these matters to the attention of the public. Consequently we note with pleasure the program to be launched

on Child Health Day by the American Child Health Association which has as its objective the stimulation of a nation-wide acquaintance with the value of diphtheria immunization. In this venture, the American Child Health Association allies itself with the members of the medical guild in a co-operative effort to stamp out diphtheria. Fortunately, the facilities available for accomplishing this goal are entirely adequate; the offices of the physicians of the United States number more than 100,000 convenient and adequately equipped individual health centers. With the assistance of the American Child Health Association, these numerous health centers scattered throughout the nation can render a more universal service to our citizens in the form of contagious disease control.

C. A. S.

DR. ARTHUR T. MANN

The death of Dr. Arthur T. Mann came with startling suddenness and a shock to his many friends who had been associated with him daily up to the very last. On Friday afternoon as we went down the office elevator together, the writer in all sincerity said "Dr. Mann, you are looking well" and he responded with a smile, "I am feeling fine, thank you." On Monday morning he was gone. The autopsy revealed a cancerous process in the coecum with perforation.

Dr. Mann died at his home, 2437 Park avenue, Minneapolis, on the morning of Monday, April 15, aged 69. He was born in New York, graduated from the University of Minnesota in 1888 and Harvard Medical school in 1896. He was an exacting, well qualified and painstaking surgeon, on the staff of the General and other Minneapolis hospitals, an associate professor of surgery at the medical school of the University of Minnesota and he held many positions of honor in recognition of his ability. He served as chief of medical service at Camp Dodge during the World War, was a member of the county, state and A.M.A. and American College of Surgeons and was past president of the Minneapolis Medical Club, the Minneapolis Surgical Society and the Western Surgical Association.

A. E. H.

DR. JOSEPH SCHWARTZ

Dr. Joseph Schwartz, 70 years old, a resident of South Dakota since 1893, died at his home in Sioux Falls, S. D., April 13, 1935. Dr. Schwartz had been in poor health for the past year but had been up and around at his office until recently.

Born in Berne, Switzerland, the son of Mr. and Mrs. Joseph Schwartz, who, with one brother, preceded him in death. Dr. Schwartz came to the United States at the age of 17 and settled in Iowa. He was married there in 1898 to Miss Grace Arnacost.

Dr. Schwartz obtained his medical degree at the University of Iowa, and studied medicine at Rush Medical College in Chicago, and at a medical school in Vienna, Austria.

In March, 1893, he went directly from college to Hartford, S. D., where he practiced medicine for 15 years. In 1908 he went to Sioux Falls and remained there until the time of his death. Surviving are his widow, three daughters and four grandchildren.

Dr. Schwartz was a member of the South Dakota State Medical Association until 1930, and was an honorary member at the time of his death.

J. F. D. C.

NEWS ITEMS

Dr. A. M. Hanson, Faribault, Minn., will spend two months in Europe in research work in London.

Dr. L. J. Bowman, Enderlin and Dr. P. G. Reedy, Casselton, have been appointed county physicians for Cass County, N. D.

Dr. Douglas Johnson, has moved from Litchfield to Cambridge, Minn., where he has purchased the practice of the late Dr. H. A. Oftel.

A new community hospital has been organized at Gregory, S. D., with a capital of $10,000 with prospects for a modern hospital being erected this year.

The American Life Convention, which held its annual meeting at Excelsior Springs, Mo., on April 27, had Dr. J. A. Myers, Minneapolis, as one of the leading speakers.

Thirty-five thousand children under the age of seven years, are under quarantine in Minneapolis, in order to combat the spread of scarlet fever in that city.

Dr. Roy Nyquist, who has been with the Huron Clinic, for the past year has located at Iroquist, S. D., where he has opened offices for general practice.

Dr. J. A. Hohf, Yankton, S. D., was a guest speaker at a recent meeting of the County Medical Society at Creighton, Neb. Dr. Hohf presented a paper on "Headaches in General Practice."

Dr. E. G. Balsam, Billings, has been appointed president of the Montana State Board of Health, with Dr. L. H. Flingman, Helena, as vice-president.

Dr. Edward A. Colp, Robbinsdale, Minn., and his bride have recently returned from their wedding trip, being married in New York City on April 3.

A gift of an elaborate set of X-ray equipment was recently made to the Montana State University by Mrs. Peek, widow of the late Dr. E. D. Peek, of Missoula.

Dr. W. E. Ground, chief of staff at St. Mary's hospital, Superior, Wis., has recently returned from an extended tour of Europe where he studied the latest scientific discoveries relating to cancer.

Dr. E. J. Huenekens, Minneapolis, was the guest speaker at the April meeting of the Renville County Medical Siciety held at Olivia, Minn. Dr. Huenekens presented a paper on "Infant Feeding."

The Technicians of South Dakota are to meet at Huron, on May 20-21, for the purpose of organizing a state association. A cordial invitation is extended to all non-registered technicians to be present.

Dr. Albert L. Doe, who was in active practice at Bowbells, N. D., for many years, died recently at his home in Long Beach, Cal. Dr. Doe was 55 years of age and a graduate of the Illinois Medical College.

Dr. W. C. Hills, Newell, S. D., was recently married to Mrs. Mabel Sexton, Flandreau, S. D. Dr. Hills is well known in that section of the state, and the couple are receiving congratulations from a host of friends.

Dr. Archibald McEachran, who has been a resident physician and surgeon in Minneapolis for over thirty years, passed away on April 11. The doctor was a graduate of the medical school of the University of Michigan.

The Mayo Foundation of Rochester will assist the California State Medical Society with a medical exhibition to form a part of the California Pacific International Exposition in San Diego, Calif., that will open May 29.

Members of the Scott-Carver County Medical Society and its Auxiliary members enjoyed a monthly dinner meeting at Montgomery, Minn., with Drs. R. T. LaVake and F. H. K. Schaaf, Minneapolis, as guest speakers.

Dr. Joseph Schwartz, who has been in active practice for over forty years in South Dakota, died at his residence in Sioux Falls, on April 12, at the age of 70 years. Dr. Schwartz was a graduate of Rush Medical College.

At the meeting of the Northwest Pediatric Society held at St. Paul last month, the following officers were elected: Dr. E. F. Robb, Minneapolis, president; Dr. R. L. J. Kennedy, Rochester, vice president, and Dr. A. Stoesser, secretary.

After a trip to Australia, Dr. C. D. Balfour, president of the American College of Surgeons and a director of the Mayo Foundation, has returned to the United States. Dr. Balfour was accompanied by his associate, Dr. M. S. Henderson.

A meeting of medical men from twenty counties was held at Aitkin, Minn., on April 27, with Dr. S. Z. Kerlan of Aitkin, one of the leading speakers presenting a paper on "Clinical Study in California," where the doctor spent several weeks during the past winter months.

Preparations are complete for the 54th annual meeting of the South Dakota State Medical Association, which will open at Pierre, on May 13, and continue for three days. The attractive program that has been issued, is certain to bring out the largest attendance for many years.

The South Dakota State Medical Association will broadcast over WNAX, Yankton, during May as follows: May 5, "Immunity" by W. H. Saxton, M.D., Huron; May 12, "Diabetes" by H. L. Saylor, M.D., Huron; May 19, "Breast Feeding in Infants" by R. A. Buchanan, Huron.

Minneapolis was honorably mentioned among cities of its class in the sixth national health conservation contest sponsored by the Chamber of Commerce of the United States. Competing cities were judged upon effectiveness of their community health programs and upon general progress in all public health matters.

The physicians and surgeons of Minot will entertain the visiting members of the North Dakota State Medical Association with a complimentary dinner at 6:30, Monday evening, May 27. The local committee are planing for a large attendance and have arranged a very interesting program for each session.

Dr. A. E. Bostrom, De Smet, S. D., has resumed to private practice as a physician and surgeon after six years spent with the state board of health and the federal government in Indian work. Doctor Bostrom takes up his practice again on the twenty-fifth anniversary of his coming

as a young surgeon for the De Smet hospital, founded at that time.

The twenty-fifth anniversary of the Ladies Medical Auxiliary of South Dakota will be held this year at Pierre, on May 14 and 15, with Mrs. R. D. Jennings the first president of the auxiliary present as honored guest. It is hoped that all of the charter members will be present. A complete history of the auxiliary will be presented by Mrs. N. K. Hopkins of Arlington.

Dr. J. A. Myers, Minneapolis, made a ten days trip last month, in several of the southern states, where he spoke before over twenty medical organizations. Among the leading ones were: the Gaston Greil Memorial at Montgomery, Alabama; the Tulane Medical School, the New Orleans Medical Society, the Florida State Tuberculosis Association and the South Carolina State Tuberculosis Association.

Dr. Percy D. Peabody, Jr., has joined the staff of the Peabody hospital, Webster, S. D. Since graduating from Rush Medical school, the doctor has completed his interneship at the Ancker hospital at St. Paul and has spent the last year taking post-graduate work at the Mayo clinic. Dr. Peabody is of the third generation of Peabody physicians and surgeons to practice in Webster.

The physicians of Cottonwood County held their April meeting at Windom, Minn., being hosts to the members of the Southwestern, Watonwan, Faribault and Martin County Medical Societies. It was a large gathering and two interesting papers were presented by Dr. A. F. Branton, Willmar, on "Malpractice" and Mr. Manly Brist, St. Paul, attorney for the Minnesota State Medical Association, on "Medical Legislation."

The Spring Meeting of the Yankton District Medical Society was held, April 24, in Vermilion, S. D. Members of the Ladies Auxiliary were present. The following program was given after dinner being served: "Therapeutic Applications of X-rays in Medicine," N. J. Nessa, M.D., Sioux Falls; "The Dental X-rays as a Diagnosite Aid," G. G. Bicknell, D.D.S., Yankton; "Economics of Organized Medicine," Will E. Donahoe, M.D., Sioux Falls.

The American Hospital Association is to be highly commended for designating a National Hospital Day, May 12, a day on which the hospitals of the country will welcome the people of their respective communities within their doors as guests. We trust that our people will take this opportunity to secure first-hand knowledge of the hospitals of the nation and the vast human service they are rendering.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters). William A O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota, is the speaker. The program for the month will be as follows: May 7, "Hay Fever"; May 14, "Anemia in Children"; May 21, "Peptic Ulcer"; May 28, "The Sixth Year Molar."

The American Medical Golfing Association will hold its 21st annual tournament at the Northfield Country Club, Atlantic City, June 10. Thirty-six holes will be played in competition for seventy trophies in nine events. These prizes include the Minneapolis trophy in the Maturity Event, limited to Fellows more than sixty years of age. All male Fellows of the A. M. A. are eligible to membership in the A. M. G. A. and only members may compete for prizes. Participants are required to furnish their home club handicap, signed by the club secretary.

All railroads will offer a rate of fare and one-third to the A. M. A. meeting in Atlantic City, June 10 to 14. Tickets will be on sale June 6 to 12, and will have a thirty-day limit. One way fare is $43.73 and round trip tickets, by reason of convention rates, will be $58.31. Round trip tickets via New York City, will be $62.38. Lower berths, Minneapolis to Atlantic City, will cost $11.50. Tickets will be sold on the "certificate plan" and Society members at the time of purchasing a one-way ticket should secure a receipt which will enable them to obtain a return ticket at one-third of the normal one-way fare.

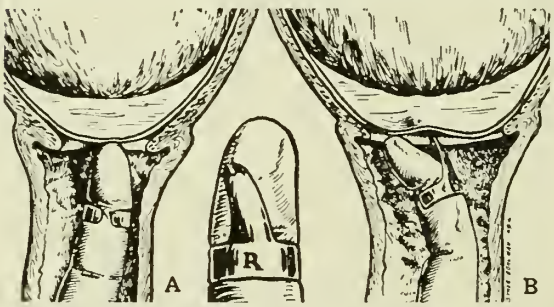
Studies at the University of Minnesota on the problem of hay fever have contributed important new facts in regard to the causes of hay fever and have placed the treatment on a more exact basis. A marked improvement in results obtained from treatment at the University has followed the application of this newer knowledge. To secure a wider application of these facts, which will serve as a check on results obtained here and at the same time make it possible for the practicing physician and his patients to profit thereby, the University is offering in limited quantities a pollen diagnostic set that is a duplicate of the one evolved from the studies referred to above and the one in use at the University at the present time. This contains all the pollens which

are important as common causes of hay fever in the State of Minnesota, arranged in groups, according to botanical knowledge and verified by clinical experience.

The winter meeting of the Minnesota Radiological Society was held in St. Paul, on March 16, where the following program was presented: "Radiography of Sphenoid Sinuses Through the Open Mouth," Edward Schons, M.D., St. Paul; "Roentgenological Study of the Mastoid with Operative Findings in 230 Cases," H. M. Berg, M.D., Bismarck, N. D.; "Biliary Dyskinesia," Herman Wolff, M.D., St. Paul; "Comparative Value of Radium and Roentgen Therapy in Various Types of Malignancy," Charles B. Drake, M.D., Minneapolis; "Roentgen Diagnostic Round Table"; "Disadvantages of X-ray Paper from the Physical Standpoint," Alfred B. Greene, B.Sc., Oak Terrace; "Medical Economics in Relation to Radiology," informal discussion. The annual meeting of the society will be held in Minneapolis in connection with the meeting of the Minnesota State Medical Association, June 24, 1935. At that time the Carman Lecture in Radiology will be given at the meeting by Dr. Percy Brown of Boston. Dr. Brown's subject will be, "Value of Fluoroscopy in Roentgen Diagnosis and Carman's Influence Upon It."

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New Series

Cutaneous Mycotic Infections and Contact Dermatitis

Oliver S. Ormsby, M.D.
Chicago, Ill.

THE affections indicated in the above title are found in quite a large portion of patients seeking professional advice.

The mycotic affections to be discussed will be limited to ringworm of the hands and feet and yeast infections. The former is important on account of its prevalence and because of the fact that a large proportion of the population is ringworm conscious and therefore using self treatment. Yeast infections are assuming more importance on account of the fact that several affections formerly described as independent have been found to be of monilial origin and are therefore now classed together.

Contact dermatitis is common and often the detection of the offending irritant requires much investigation, and, as the success of treatment depends on the isolation of the irritant, a certain degree of familiarity with the common irritants is essential.

In 1916 when the subject of ringworm of the hands and feet was investigated in this country by Dr. Mitchell and the writer, it was practically an unknown affection. A case of eczema marginatum of the toes had been recorded by Montgomery and Culver in 1914. In 1915 Hartzell recorded four cases seen by him in the past few years and in 1916 Guy Lane recorded two cases. Our investigation included 65 patients, the subject of dysidrosis or eczema, in all of whom the ringworm fungus was demonstrated.

Several years elapsed after our publication before physicians began recording results of their investigations and somewhat later proprietary articles began to appear which were advertised and sold to the lay public. The result is that for several years past all cutaneous affections of the hands and feet have been considered ringworm (athlete's foot, so-called) by the public and so treated often with deleterious effects.

Clinical Symptoms: Three clinical varieties are seen. First, acute vesiculo-bullous (dysidrotic); second, chronic intertriginous; and third, hyperkeratotic.

The acute vesiculo-bullous type is characterized by groups of deep seated vesicles which may be slightly elevated or be level with the cutaneous surface. They vary in size up to that of a millet seed and usually present the appearance of a boiled sago grain embedded in the skin. The vesicles may be single and isolated and irregularly scattered over the surface, or be grouped into patches of variable size, or they may be profusely distributed over much of the plantar or palmar surface.

The early lesion is a vesicle and this is usually not surrounded by redness. After several days the fluid is absorbed, leaving a brown macule. After desiccation the roof becomes torn exposing a smooth red shiny surface surrounded by a collarette of scales. In the keratotic cases the

*Read before the Sioux Valley Medical Association at Sioux Falls, S. D., January 23, 1935.

vesicles develop into brown keratotic buttons, 1 to 2 m.m. in thickness, which by multiplication and fusion produce more or less diffuse keratoderma.

In acute vesicular cases bullae are often found. In these there is much swelling and edema and the patient may be incapacitated for variable lengths of time. In other cases red, circular, well-defined areas, from which the superficial epithelium has been exfoliated, are seen and these may heal spontaneously or the areas be extended by the development of vesicles around the margins. Occasionally through secondary infection pyoderma develops, and eczematization is not infrequently seen.

In the fourth interspace, the epithelium is often thickened producing a whitened sodden mass and a fissure is frequently seen at the base of the fifth toe. These conditions not infrequently involve several or all of the interspaces.

In the keratotic variety areas of keratoderma of variable size form. At times the entire sole or palm is invaded producing a diffuse plantar or palmar keratoderma.

When complicated by secondary infection there is often much swelling and edema of the under surface of the toes and contiguous portions of the soles and the intertriginous surfaces. These are usually accompanied by much tenderness and pain.

Ordinarily the subjective symptom is itching, which may be moderate or severe. Tenderness and pain are added in the acute bullous and secondarily infected cases.

While in the major portion of cases the infection is limited to the hands and feet, other areas such as the crotch, axillae, trunk and extremities may be the site of a scaling dermatitis in which the causative fungus may be found.

Epidermophytids: This term indicates an eruption produced primarily by a ringworm fungus, which remains in the lesion only a short time and is, therefore, rarely demonstrable microscopically. In these cases the microorganisms are brought to new areas from an old focus (usually feet) where they are soon destroyed through the existing allergy produced by the old infection.

The palms are the common seat of this eruption which may be vesicular or squamous. The vesicles may be deep (dysidrotic type) or superficial and the accompanying inflammation is variable as to degree. Palmar epidermophytids occur most often in association with the acute bullous type on the feet. Occasionally this "ide" eruption has a more widespread distribution. An eruption resembling pityriasis rosea or erythema multiforme may develop over the extremities or trunk. Occasionally patches of dermatitis resembling eczema are of this type and in rare instances a general exfoliative dermatitis may result. Microscopic examination of any type of this "ide" eruption reveals no fungi, while at the same time ringworm fungi are readily demonstrable in the lesions on the feet.

Etiology: In our original study, which has been continuously confirmed, the affection occurs more often in men than in women and on the feet more frequently than on the hands. In a certain proportion of cases eczema marginatum precedes. Familial transmission occurs. The disease is more prevalent in warm weather, exacerbations occurring in the spring and fall. Sporadic cases do occur during the winter months. The microorganisms may lie dormant in calluses, under or around the nail, or even in the superficial layers of the epidermis between the toes for a long period of time. From these points re-infection occurs when heat and moisture develop in the warm season. Common sources of infection are dressing rooms, runways to shower baths in athletic departments of school and universities and in athletic and country clubs. The prevalence of mycotic infection of the feet and its increase in gymnasia of universities was well illustrated by a report by Legge, Bonar and Templeton. Three thousand, one hundred and five freshman matriculates were examined at the beginning of the autumn gymnasium work. Of these 51 per cent of the men showed clinical evidence of ringworm. At the end of the semester, an examination of the same group by the same medical officers, found the proportion to be 78 per cent, an increase of 27 per cent.

The direct cause of the affection is a fungus belonging to the families of either the epidermophyta or the trichophyta.

Diagnosis: The major portion of cases of dysidrosis are examples of ringworm and also quite a proportion of those formerly classed as intertriginous eczema, together with a certain percentage of cases of localized keratoderma of the hands and feet. An immediate diagnosis can be made in practically all cases by a microscopic examination of the roof wall of the sago grain vesicle or of scales from the interdigital spaces, as well as from other scaling areas on the foot. The material to be examined is placed on a slide in a drop of a 10 per cent to 20 per cent solution of sodium hydroxid. If the roof wall of the vesicle is used it is placed with its under surface upward, the cover slip is placed over the preparation and the slide gently heated until the

preparation boils. Examination with a medium powered lens reveals the fungus which is seen as jointed mycelial filaments.

Disorders from which it is to be distinguished are dysidrosis, eczema, a resistant vesicular dermatitis of palms and soles, a superficial vesicular eruption probably of infectious origin, an external irritant dermatitis, and a pustular eruption of the palms and soles described below. While the major portion of cases of what we formerly considered dysidrosis are examples of ringworm, there still remains a minority which can be considered as dysidrosis and these cases usually present a constitutional background, indicated by circulatory changes, excessive sweating, and so on. In the resistant vesicular dermatitis, which is probably of toxic origin, the vesicles are usually deep seated, limited to the palms and soles, and do not involve the intertriginous areas. In practically all of the cases I have seen, they have been considered ringworm and treated as such without beneficial results. In the superficial vesicular type of infectious origin, areas of dermatitis of the same type may be found on the glabrous skin, which is of diagnostic importance. In the external irritant type, the lesions are apt to be between the fingers and on the dorsum rather than on the palmar surface. In none of these is the ringworm fungus found microscopically.

Ringworm is readily distinguished from a pustular affection occurring on the palms and soles, described by Barber as pustular psoriasis, by Audry as an abortive form of acrodermatitis continue, and by Andrews, Birkman and Kelly as a recalcitrant pustular eruption of the palms and soles. This affection is characterized by an exfoliative type of dermatitis beginning in the center of the palms, extending over the thenar and hypothenar eminences and at times covering the entire palm and palmar surface of the fingers. On the feet it occurs characteristically on the insteps from which it may spread over the entire plantar surface. The interdigital areas, usually invaded by ringworm, are free. The early lesion is a small, flat, discrete pustule. Throughout the patch there are scattered pustules and crusts. These are more abundant at the margins. The course of the affection is characterized by periods of activity and partial quiescence. During the former, severe burning sensations occur. The affection is resistant to treatment and microscopic examination reveals no fungi.

Absence of fungi in the vesicles or scales taken from the feet is important from a diagnostic standpoint. It is much less important from similar lesions taken from the palms. This is explained, as noted elsewhere, on the ground that in numerous cases of ringworm the palmar lesions are "ide" eruptions in which microorganisms are rarely found.

Treatment: The method of treatment depends upon the type of eruption. When the affection is acute on the feet, accompanied by vesicles and bullae, together with secondary infection, hot soaks with a 1:2000 solution of potassium permanganate used two or three times daily is efficient. In the interim between soaks the following soothing ointment may be applied: Naftalan—10 gm., Amylum—25 gm., Zinc Oxid—25 gm., Petrolatum q. s. ad.—100gm. Ichthyol, 2 gm., may replace the naftalan in the above formula. When the acute stages have subsided, an ointment containing salicylic acid and benzoic acid, originally recommended by Whitfield, is efficient. This ointment contains: Salicylic acid—2 gm., Benzoic acid—4 gm., Petrolatum—30 gm. This ointment or chrysarobin in petrolatum in the strength of 5% to 10% or in suspension in traumaticin in the same strength may be used in the ordinary cases from the beginning. These preparations cause exfoliation. When this is complete Hebra's unguentum diachyli albi may be employed at night with the following drying dusting powder applied in the morning: Magnesium carbonate—4 gm., Boric acid—4 gm., Talc—q.s.ad. 30 gm. These should be continued for several weeks during which time the salicylic acid and benzoic acid ointment above mentioned should be used as a prophylactic measure around and beneath the nails and on calluses, if present. In the subacute and keratotic cases, the salicylic and benzoic ointment is advisable for the beginning. In the chronic intertriginous type, curettage is employed when the leathery whitened mass has been softened which hastens recovery. On the hands a zinc oxid and aqua calcis lotion (Sodium biborate—10 gm., amylum—15 gm., zinc oxid—15 gm., liquor calcis—120 gm., aqua rosa q.s.ad. 240 gm.) is advisable in the vesicular cases, together with the keratolytic ointment above suggested for the feet, reduced 50%. If the lesions consist only in dry scaling areas, the ointment alone will be sufficient. In certain cases where eczematization develops over the dorsal surface of the fingers or hands, toes or insteps, the keratolytic or chrysarobin ointment should not be used. In these areas either the naftalan or ichthyol preparations above mentioned are more suitable. In certain cases injections of trichophytin may be required. This treatment

should be reserved for resistant and intractable cases and the initial doses should be small.

Prophylaxis: A one per cent solution of sodium hypochlorite used for bathing the feet was found efficient by Osborne and Hitchcock. They recommended the employment of rubber pans, approximately two feet square, in which a one per cent solution of sodium hypochlorite was placed. These pans were used in shower rooms and students were instructed to immerse the feet in one as they went into the bath and into another as they came out. In newer athletic departments of schools and universities, wells are being built in the floor of the corridor passing from the dressing room to the showers or baths, through which the students pass. The solution above mentioned is placed in these wells and, therefore, does away with the use of the pans. The disease may be reduced to a minimum in public schools and universities by employment of these measures.

Sterilization of the shoes, socks and other articles of clothing, together with rugs and carpets which have been in contact with the feet of an infected patient may be sterilized by formaldehyde fumigation. Ayres, Anderson and Youngblood demonstrated the effectiveness of this method by using formaldehyde candles. Individual prophylaxis in clubs is promoted by the use of wooden soled sandals between locker rooms and showers.

Moniliasis

A number of cutaneous and mucous membrane affections formerly described as entities have been found to be due to yeast or yeast-like microorganisms. Among the cutaneous affections are erosiointerdigitalis, perleche, water bed dermatitis, paronychia and onychia. In addition, a mycotic dermatitis frequently occurs beneath the breasts in fleshy women, in the axillary spaces, in the anogenital region, and occasionally, the affection becomes generalized. Two or more or all of these affections may co-exist in a given patient. Through experimental work all have been produced by inoculation of cultures taken from patients exhibiting the various types of dermatitis.

Paronychia: Mycotic paronychia presents a characteristic picture and occurs in two forms, acute and chronic. The chronic form is quite generally distributed, but occurs frequently in workers in fruit canneries and other industrial laborers. The chronic form presents a characteristic picture described by MacLeod as a "pad or bolster-like swelling of the nail wall, which on being squeezed emits a head of pus on the nail plate." This enlargement is most marked at the base of the nail and gradually tapers down plate. The degree of inflammation varies in different cases and there is usually an associated dystrophy of the nail plate, due to interference with the formation of the nail at the lunula. In on the sides toward the distal end of the nail acute cases, such as described by Kingery and Thienes, seen in workers in fruit canneries, there is much swelling and pain and often shedding of the nail.

Monilial onychia resembles the ringworm type. In the chronic form transverse ridges occur in the nail plate and it becomes opaque, thickened, discolored and brittle. Sub-ungual keratoses are present beneath the lateral and distal portions of the plate causing it to be raised from the bed.

Perleche: In this condition, there is an inflammatory reaction occurring at the angles of the mouth, usually in children. It is characterized by a thickening and whitening of the epithelium, together with fissures. The affection sometimes spreads toward the center of the lip and over the glabrous skin in the immediate vicinity. The thickened epithelium, often likened to mother of pearl, is sometimes easily detached. Occasionally, a moderate degree of crusting occurs. The fissures are superficial and rarely bleed and ulceration does not occur. A scaling dermatitis of seborrhoeic type sometimes occurs in the immediate vicinity.

Erosio Interdigitalis: This type occurs on the web of the fingers, usually on the third and fourth interspace. It may occupy all of the interspaces and it sometimes occurs between the toes. It is characterized by a shiny red area, surrounded by a collarette of scales or it may be represented by an accumulated mass of sodden, moist, whitened epidermis. Vesicles are usually absent, though points on the reddened area may indicate former vesiculation. This form of moniliasis is exceedingly difficult to eradicate.

In addition to the erosio type of lesion, a vesicular and papulovesicular eruption occurs in the interdigital surfaces with occasional maceration and fissuring.

Waterbed Mycosis: This form is characterized by the development of herpetic-like vesicles with red areolae, together with pustules. These develop in a continuous water bath or on areas of the skin where moist dressings are applied over a considerable period of time. A frequent site is the abdomen, following laparotomy where moist hot dressings have been employed. At times the inflammatory reaction becomes marked, in which case redness, edema, weeping and crusting occur.

Glabrous Skin Types: On the glabrous skin a mycotic dermatitis is characterized by variously

sized, well-defined, circular, red, scaling patches. By fusion gyrate configurations are produced. Moist crusting patches, suggesting eczema, occasionally develop while in widespread cases there occurs simply a dry dull red scaling dermatitis. Patches begin with vesicles or vesico-pustules, which rupture leaving denuded red areas surrounded by rings of detached epidermis. These spread peripherally and by coalescence with others form the patches. By the development of new vesicles in the vicinity and their undergoing the above involution, large areas become invaded. In the crotch and beneath the breasts and in other intertriginous regions, the bottom of the cleft is usually fissured while the skin in the involved area is shiny, light to dark red, presents some moisture and has scale covered margins which are polycylic in outline. When the anogenital region is involved, varying degrees of itching occur for the relief of which scratching is practiced, which results in thickening, excoriations and fissuring of the skin. In the anal region the erosio type seen between the fingers is sometimes present.

Patches of dermatitis characterized by redness and vesiculation, scaling and crusting, may also be found on the dorsum of the hands and on the forearms. Involvement of these areas frequently occurs in association with paronychia seen in workers in fruit canneries.

Dermatitis Seborrhoeica: The clinical description of this form of dermatitis will not be outlined as it is familiar to all. The point of interest in this connection is the fact that a yeast-like organism, spore of Malassez or pityrosporon of Malassez, was cultivated by MacLeod and Dowling from all types of this affection and the disorder reproduced by experimental inoculation. In their work they found it necessary to inject the cultures intradermally or to rub them into lightly sclerified areas, to reproduce the affection.

Monilial Infection of Mucous Membranes: In addition to thrush which has long been known to be of mycotic origin, other forms of stomatitis and glossitis occur. As there is no symptom complex characteristic of monilial infection, and as these organisms are sometimes found as saprophytes in such diseases as syphilis, some difficulty is encountered in recognizing these affections.

On the lip and buccal mucosa and on the mucous membrane of the pharynx and larynx, grayish white membranous pellicles of varying dimensions are seen. These pellicles are translucent and usually easily detachable. They also occur on the tongue and gums. Occasionally there is apparently more thickening when the pellicles become more adherent, and when detached leave superficial erosions, thus presenting a clinical picture of leukoplakia.

On the buccal mucosa, Engman and Weiss early described a lesion which occurred as a glistening white mat of filiform projections situated on a white macerated base.

On the tongue, Zeisler described scroll-like patterns resembling geographic tongue. Robinson and Moss described an acute form in which the anterior surface of the tongue was red and the papillae were edematous and eroded; also a chronic form in which the papillae were absent, and the surface of the tongue presented a smooth or slippery appearance like wet, red rubber. Miller and Morrow described a deep form in which a gumma-like lesion developed in the soft palate in the tonsilar region. This lesion developed acutely and caused perforation of the soft palate.

Etiology: Cutaneous and mucous membrane mycotic infections may occur at any age from infancy on and in both sexes. Paronychia is at times an occupational affection induced in the cases described by Kingery and Thienes by contact with fruit juices in cannery workers, and by orange juice in cases described by Sutherland Campbell. It frequently occurs in women who handle sugar, such as those employed in confectionery factories, and in pastry cooks, and so on. Diabetes is occasionally a predisposing factor. In the erosio type constant immersion of the hands in water, a condition imposed in washer women, is effective and constant wet dressings constitutes the predisposing factor in the water bed type. Infection of the skin in infants frequently comes from oral and intestinal thrush and in adults not infrequently from the stools. The organism most frequently found is monilia albicans (formerly oidium albicans). Cryptococci, pityrosporon of Malassez and other yeast-like organisms are also concerned in the production of these mycoses.

Diagnosis: The major portion of cases of mycotic infection of the skin due to monilia and related organisms usually present sufficiently characteristic symptoms for their recognition. A microscopic examination in all cases is essential. Scrapings from the lesions are mounted on a slide in a 10 per cent to 25 per cent solution of sodium hydroxid, over which a cover slip is applied, and gently heated. The organism shows plainly and presents the following characteristics with a medium high power objective. Mycelium and spore-like bodies are seen. The mycelia are

more delicate and less refractile than those of ringworm. Septa are rarely demonstrable. Oval spore-like bodies with buds attached to the ends are also present.

In young cultures the organism appears chiefly as round or oval cells, which multiply by budding. In old cultures hyphae develop.

Treatment: Oral thrush in infants responds well to swabbings with a one per cent solution of gentian violet, together with mild alkaline mouth washes. For superficial lesions of the mucous membranes of the mouth and vagina, a three per cent solution of gentian violet is efficient, using it as a swab twice daily. Alkaline mouth washes for the oral cavity and a douche containing a 1:2000 solution of potassium permanganate for the vagina facilitate recovery. For the deeper lesions on the oral mucosa surgical excision, Roentgen rays and the internal use of potassium iodide may be necessary.

Paronychia responds quickly to the local application of a five per cent suspension of chrysarobin in chloroform. This is very efficient and was originally recommended by Morrow and Lee for the treatment of chronic paronychia before moniliasis had been recognized. In the erosio type, which is resistant, the parts are to be kept dry. The local application of chrysarobin in the strength of five per cent or 10 per cent, or tincture of iodine, is valuable. In the water bed type suspension of wet dressings, together with the application of a soothing lotion, such as the aqua calcis and zinc oxid lotion, together with a 10 per cent naftalan, or two per cent ichthyol ointment, soon relieves the condition.

In the intertriginous type occurring especially beneath the breasts, and in the crotch, painting with a three per cent solution of gentian violet is very efficient. When much inflammatory reaction is present, a preliminary treatment for several days may consist in soaking the parts twice daily with a hot solution of potassium permanganate in the strength of 1:2000, dressing the parts in the interim with an ointment containing 10 per cent naftalan.

In perleche, Finnerud found the local application of an eight per cent solution of silver nitrate efficient. This application may be repeated at three or four day intervals. Prophylaxis is necessary in this condition when occurring in epidemics and consists in the use of individual drinking cups and towels, and careful sterilization of the utensils used by the patients and also, avoidance of direct contact.

Contact Dermatitis

Dermatitis presumably produced by external irritants is a condition for which a large number of patients seek relief. This type of dermatitis covers a broad field. At one end of the chain are those cases produced by ivy, primrose, and so on, termed dermatitis venenata in this country, and at the other, the trade and professional eczemas in which external irritants operate on a skin having an eczematous background. In the venenata type hypersensitiveness is usually specific and restricted to a single irritant, while in the second, multiple sensitizations occur simultaneously or successively.

Both of these groups fall into the category of contact dermatitis and members of each have many symptoms in common. It is important, however, to distinguish them when forecasting a prognosis as the dermatitis venenata type is a comparatively simple affection running its course in a short time and does not recur unless contact with the same irritant is repeated, whereas, the other type often continues indefinitely through the development of new sensitizations. The recognition of contact dermatitis is not difficult, but the discovery of the exciting irritant often presents a problem.

The number of substances capable of inducing dermatitis by contact is endless. There are, however, certain ones that are responsible for the majority of cases. Among these should be mentioned plants (ivy, primrose), animal proteins (hair, dandruff, feathers), dyes, cosmetics, matches and chemicals.

A clue at times is suggested by the season of the year when the dermatitis develops and also by the areas of the cutaneous surface first attacked.

Ivy dermatitis occurs during the summer, primrose dermatitis at any season, but in increased numbers about the Easter season when these plants are extensively distributed. In the autumn and early winter, dyes in furs become important. A dermatitis recurring on Monday suggests para-red used as a pigment in the rotogravure section of the Sunday paper.

The location on the skin is often suggestive of the nature of the irritant. When the dermatitis begins on the neck, the dye in the fur collar is suspected. When extending over the forehead from the scalp, hair lotions and dyes may be responsible. When patches are situated under the vest or trouser pocket of a man, matches are immediately incriminated. It is the sesquisulphid of phosphorus that is effective here.

Among the common irritants are: Paraphenyl-

lendiamin in hair dyes and fur. This substance is an excellent dye, but has unusual irritating effects. Pyrogallol also found in hair dyes, usually claiming to be walnut stain, often produces dermatitis. Anilin dye in face powder and rouge and powdered orris root in face powder are common irritants. Toilet water containing bergamot may produce dermatitis and pigmentation. (Berloch dermatitis). Various perfumes and perfumed cold cream. Lash Lure (an eye lash dye). Picric acid and butysin picrate used in the treatment of burns often produce severe dermatitis which may be accompanied by general toxic reactions.

Other common irritants include: Adhesive plaster, insect powder (pyrethrum), hexylresorcinol Solution ST 37 (an antiseptic), novocaine and related substances, formalin, orthoform, metol (used by amateur photographers), lacquer (used on canes, Mah Jongg sets and other articles). This preparation is manufactured from a Rhus varnish. Woods—coco-bolo, yew and numerous others; turpentine is a very common irritant due to its extensive use in house renovation.

The clinical symptoms of the venenata type range from erythema to gangrene, depending upon the exciting factor. In the early stages there is erythema limited to the area of contact. This is shortly followed by edema, swelling, vesiculation and crusting. Occasionally, secondary infection is indicated by pustulation. At times the dermatitis spreads beyond the demonstrable area of contact and may through invasion of successive areas continue to develop over several weeks and over a large proportion of the cutaneous surface. In the major portion of these cases the dermatitis develops within a few hours after contact with the irritant. In recurrent attacks, particularly in that form produced by primrose, the inflammation may be subacute and resemble eczema. In these the lesions are erythemato-vesicular or erythemato-squamous and are accompanied by infiltration and scaling.

Match or Matchbox Dermatitis: This form of dermatitis was originally recognized by Rasch in Denmark. The dermatitis begins on the thigh or side of the abdomen under the trouser or vest pocket where matches have been carried. In these areas there is a well-defined patch of scaling dermatitis. Somewhat later the affection involves the face, lids, hands and other regions of the cutaneous surface. On the face the reaction may be so severe as to entirely close the eyes with the extreme edema and swelling.

Diagnosis: From what has been stated before, it is apparent that the recognition of contact dermatitis is not difficult, but the discovery of the excitant often presents a problem. A careful search of all contacts with possible irritants is made and any articles suspected may be employed for cutaneous testing. The test that is of most service is the contact or patch test, originally described by Jadassohn and employed much by Bloch. In this test, the suspected substance is placed on a piece of linen and applied to the normal skin and this is covered with a piece of gutta percha tissue or oil silk and held in position with adhesive plaster. It is removed after 24 hours. A positive reaction is indicated by a dermatitis of the nature of the one primarily exhibited. It may occur within a few hours or be delayed several days, depending upon the degree of hypersensitiveness of the patient.

Treatment: The most important task is the discovery of the irritant and its removal from contact with the patient. The treatment of the immediate attack consists of both local and internal applications and agents. An efficient method is the employment in the early stages of an aqua calcis lotion (formula given earlier in this paper) several times during the day, alternated with the application of an oily cream such as the following: Bismuth subnitrate—4 gm., Zinc Oxid—8 gm., Olive Oil—120 gm., Liquor Calcis q.s.ad.—240 gm. After two or three days, when the affection is less acute, the same preparations may be used during the day with an ointment containing naftalan or ichthyol over night (formulae of these given earlier in this paper). In some instances where pyogenic infection has developed a solution of aluminum subacetate or potassium permanganate may be necessary. The use of extracts of plants for immunizing and curative purposes varies with individual opinion. In ivy dermatitis Schamberg advised the internal administration of the tincture of Rhus toxicodendron, compounded as follows: Tincture rhus toxicodendron—1 gm., alcohol—5 gm., Syrup of orange q.s.ad.—100 gm. The preparation is given after each meal, beginning with the dosage of one drop, increasing one drop each dose to twenty-one, after which one teaspoonful is given once a day.

Immunizing injections are of value in some cases and may be employed both for immunizing and curative purposes. A method of treatment of all types of contact dermatitis which has been of great value to the writer is the use of sodium thiosulphate. This is given by intravenous injection as follows: One-half gram the first day,

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South Dakota Children Get a New Deal in Health*

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Pierre, S. D.

THIS is a record of some of the things accomplished in our state for child health. To other states, they may not seem so great, but we are rather proud of this record. First, take into consideration the fact that our Child Hygiene Division operates on a state appropriation of five thousand dollars annually, with an additional fund of two thousand, five hundred dollars for crippled children. Out of the five thousand dollars appropriation, it is necessary to pay the salary of the director, the salary of the secretary, travel expenses, which included this year travel to eighty communities to conduct summer pre-school clinics, inspection of maternity homes, visits to crippled children and attendance on many meetings of welfare organizations.

For the past few years, due to depleted family budgets, coupled with a lack of health consciousness, our children have suffered greatly. Since our state is agricultural and composed largely of rural population, we have been slow to enter the fields of public health. At times, it seems to us that we have been more interested in good roads and vaccinating our stock than in the immunization of our children.

Surveys showed that at least twenty per cent were malnourished and thousands were suffering from physical defects, many of which were remedial and even preventable.

The first big piece of work of the year was begun in February. At this time, the Federal government gave us eighty-two nurses who worked under the Child Health Nursing Project (F.E.R.A.). These nurses have been under the direction of Mrs. Florence Walker Englesby, R. N., state supervisor of the C.H.N.P. and six district supervisors. The Federal set-up ruled that these should be unemployed public health nurses. Such were not available. They were then selected from a list of registered nurses and trained by the supervisors. They have proven to be, on the whole, easily trained and their record of accomplishments has been outstanding. These are some of their activities: formed Health Committees or Councils, inspected all school children in their respective counties, made many home calls, assisted at clinics for the correction of physical defects, assisted at eighty-one pre-school clinics put on by the Child Hygiene Division, helped to procure milk, cod liver oil and other foods for the malnourished; inspected maternity homes, helped to organize and assist at immunization clinics, conducted classes for expectant mothers. They were also active in many more projects. Their accomplishments cannot be estimated in actual figures, but we give some statistics as tangible evidence of some things they have helped to put across:

The total number of schools inspected was 5,483.

The total number of pupils inspected was 115,984.

The total number of children found underweight, 10 per cent or more, was 20,682.

The total number with nose and throat defects was 9,889.

The total number corrected for these nose and throat defects was 1,863.

The total number with eye defects was 20,546.

The total number with vision corrected was 467.

The total number with dental defects was 9,865.

Mothers classes conducted 169 series with a total attendance of 1,591 mothers, 25,000 were immunized against diphtheria and 12,000 against smallpox.

Another outsanding accomplishment for child health was the examination of 6,500 pre-school children, as conducted by the Child Hygiene Division of the State Board of Health. One half this number were immunized against diphtheria and smallpox. Many of these who were possible contact cases were Mantoux-tested for Tuberculosis. The total number examined was more than double the number examined in previous years. Eighty-one pre-school clinics were conducted and those who desired it were immunized.

The following are some of the high lights brought out by the clinics. Not ten per cent of the children had had immunization against smallpox or diphtheria and practically none against typhoid and scarlet fever except at Chamberlain, where many were protected against typhoid due to the epidemic. None were found that had had a skin test for tuberculosis. One objection I

*Read before the County Health Officers' meeting.
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found in regard to the use of diphtheria toxoid was that several doctors over the state advised against its use in cases of Asthma. Children were brought to our clinics, victoms of Asthma, and Hay Fever. I hesitated to immunize them on account of the advice. My our opinion would be that these children would be more susceptible to the serum in case they fell ill from the disease and are the ones that would need it badly.

We did about three hundred Mantoux tests. The cases were selected from families who were possible contact cases. About ten per cent showed a positive reaction. The banner family was found in Mobridge. A year ago, I discovered an active advanced case, a girl of fourteen years of age. She was taken to Custer two weeks later. Superficial examination of the other members of the family showed no chest findings. This year since we had provision for a few Mantoux's, I was able to examine five out of a family of nine, and Mantoux-test them. Four of this number showed positive reactions. Hurried examination showed nothing in the chest. We were able to get X-rays on all of these. Dr. Floyd Coslett, Supt. State Sanatarium, Sanator, S. D., read and studied the films and said that three were incipient and one advanced. This one family is an example of what we have in the state. They have been short of funds. This first case was neglected for months and was only discovered by accident. In the meantime, the family had been living in crowded quarters and unable to buy the proper food. Dr. Coslett advised that the three cases which were beginning could be cared for better at home with the proper diet and hygenic surroundings. The child at Sanator was unusual in that she had the adult type of Tuberculosis. We find great objection to skin tests for Tuberculosis among the laity. We even found some well-trained doctors who objected on the grounds that it pre-disposed if it did not actually produce the disease. We are sadly in need of education along this line in this state.

Our work this summer was just a start—just a mere gesture. We hope to do much more in another year. The relief work and supplying of food for families has reduced malnutrition almost half.

We were able to contact a few expectant mothers and are providing literature for them. The F.E.R.A. nurses are sending in lists of these mothers to our department. Never before have so many pamphlets, etc., been sent out as this year. This is the only way to reach these mothers for in rural communities mothers' clases are a failure.

These are some of our unusual crippled cases:

A father with four children, ages 3½, 2 and twins at 6 months. These were referred to an orthopedist. This is his report:

"The above patients presented themselves for an examination on October 22, 1934. They were accompanied by their parents. They came in because of multiple tumors which, in the case of the 3½ year old, causes an external angulation with a slight varus deformity of the foot, and in the case of the 2 year old, causes a slight angulation at the wrist due to bony enlargement. In the case of the 6 month old twins, there is no deformity present, but bony enlargements can be detected in the ankles and shoulders. None of the children have pain. They came in because of the known bone tumors and the slight deformity. The father stated that he had a much similar condition which had been present since youth and which had been symptomless.

X-rays were taken of the arms and legs of the above three children and also of the arms and legs of the father which revealed the following:

3½ year old:

Right humerus, 17¼ cm. long and negative.
Left humerus, 16½ cm. long with exostosis.
Proximal ⅓, inner aspect.
Right radius, distal ⅓ ulnar aspect.
Shows exostosis.
Right Ulna, negative.
Left radius, distal ⅓, ulnar aspect.
Shows exostosis.
Left Ulna, negative.
Right and left femur, proximal ⅓, show widening.
Right and left femur, distal ⅓, medial aspect, shows exostosis.
Right and left tibia, distal ⅓, external aspect, shows exostosis.
Left tibia, proximal ⅓, medial aspect, shows exostosis.

(Other two cases similar.)

Father:

Right and left proximal humerus shows large exostosis.
Right and left proximal tibia and fibula shows large exostosis.
Right and left distal tibia shows external exostosis.

The father also shows palpable exostosis in the femur which does not show on the X-ray. A diagnosis of multiple exostosis with unequal bone growth of the various bones is made in the case of the father and three children. A six months twin at home is also afflicted.

Conclusion: The above patients are afflicted

with a rather unusual familia condition. The cause of these bone growths is not known. Therefore, there is not treatment known which will prevent their occurrence. The tumors will probably increase in size and cause some deformity and possible disabilities. I believe that no attempt should be made to remove the bony growths unless they cause pain or gross deformity. If deformity takes place, as I think it is taking place in the ankles of the 3½ year old and in the wrists of the 2 year old, I believe that this deformity should be corrected by an osteotomy of the extremity with little or no attempt towards removing the bony growths. If the bony growths cause pain or gross deformity, a portion of this can be removed to correct the deformity and relieve the pain with fairly satisfactory results. I would advise that these patients return in six to nine months for another check-up to note the condition and if pain or deformity seems to be of serious consequence, I believe that plans should be made to correct this."

Two other outstanding cases were those of a girl and a boy of different families of unusual development. The girl, 4 years old, 4 inches taller than the average for her age, and about 20 per cent overweight for her height, above the average in intelligence. Her breasts were well-developed and she had a beginning growth of pubic hair. She was referred to the family doctor who had not seen her for some time. He decided that it was a pituitary dysfunction. The other was a boy 2 years and 3 months old. He was apparently a normal baby until nine months of age, weighed 8½ pounds at birth, normal birth, and the youngest of a family of seven, all of the others being normal. He had his first tooth at 6 months, talked at 15 months, walked at 12 months. He had never had an illness until his present illness, which began one month previous to his examination. He then developed whooping cough, measles and pneumonia. At the time we saw him, he was what I thought hopelessly ill. The first impression given on seeing him was that he was a monstrosity. In contrast to the other case: he was 4 inches shorter than the average for his age and was 6 pounds overweight. He had lost 17 pounds during his months illness since he wasn't able to retain food. He gave a complete picture of adult pigmy. He had a coarse voice, coarse black hair. There was a thin growth of coarse hair on his lip and chin. Hair was present on his chest, back and pubis. External genitalia were unusually developed. He had a sinus draining pus, located to the right of the upper end of the sternum. This had developed during his illness. It was impossible to determine the focus, as I did not have much time to devote to him, since I had a very large clinic. I would judge it came from a lung abscess, since he gave a history of having coughed up blood and pus. He was above average in intelligence. The mother in this case is very co-operative. She realizes that the child will probably not recover but is anxious to have the cause of his condition discovered.

We had several cases in our clinics of infants recovered from pyloric stenosis operations.

The measles epidemic of the Spring which was the largest in the history of the state, took its toll. Besides the large mortality, our clinics showed many cases of otitis media, mastoid operations, poor vision and heart lesions. The great number of complications was due to neglect because of limited finances.

Our summer conferences have always been attended by a large number of cripples. Our surveys for crippled children for the Division has been made heretofore at the time of the clinics, and as a result, has been incomplete.

This brings us to the subject of crippled children. The Division has long been handicapped by lack of funds. We entered the calendar year with our small annual appropriation of $2,500.00 not available until July 1, already drawn upon. More and more cripples were being located by our Child Health Nursing Project. Many had had no attempt made at rehabilitation. Our state cases are those who are normal mentally, whose crippling will yield to corrective measures and those who have no means to pay for these corrections. After the drive for funds for the Warm Springs Foundation had succeeded so well, we conceived the idea that we might do something along that line for our own handicapped children. We initiated a drive for funds in April and made the Child Health Recovery Nurses chairman of the project in each county. The sum of money collected is to be matched by state funds in so far as possible and is to be used to rehabilitate some worthy child or children in that county. The drive has exceeded our fondest hopes. At the present time, it exceeds our state appropriation. One fraternal organization alone gave $350.00 out of their state funds. This was the largest single appropriation. Even more gratifying than this splendid result of the drive is that it has made the people of South Dakota "crippled children conscious."

Last biennium, ending July 1, 1934, we took care of sixty-eight crippled children and investigated thirty-four other cases. In four months

of this fiscal year, thirty-eight cases have been taken care of or are being cared for at this time, and nineteen additional cases have been investigated, and treatment pending. A complete survey of crippled children under twenty-one years of age is being made by the Child Health Recovery Nurses. We have no data on that project that is complete.

The following is a report on some of our recent cases taken at random.

Case No. I

A case of osteomyelitis with sudden, almost complete deafness. The report from the orthopedist is as follows:

"The above patient was in for an examination on October 26, 1934, accompanied by his father and an aunt. The father stated that this child was the oldest of five children and that he had always been well until last December. One morning he awoke with sudden pain in his right femur, the pain being very severe. Two weeks before he had been kicked by a horse on this leg. The pain was not relieved by hot applications. The following day he was seen by a doctor. Two days later he was taken to the hospital, where the thigh was incised in its lower third and pus obtained and an opening was made at several points in the radius. His general condition was not good. He remained in bed for 86 days, during which time he drained pus from the several openings in his forearm and lower third of the femur. He was taken home somewhat improved but the pain has continued periodically in his hips and back and the sinuses have continued to drain. About June 1, the patient suddenly became deaf. He had had no known middle ear infection. He has remained deaf up to the present time. Of late he has begun to read lips. Conversation is carried on mainly by writing. The past month he has been somewhat improved and has been able to sit up in a chair but cannot walk. He cannot stand unassisted.

"Examination showed a pale, emaciated youth, who shows evidence of having been acutely ill. He cannot hear conversations but appears unusually bright and is able to understand considerably by reading lips. He was taken immediately to the hospital. Examination showed two draining sinuses in the right femur and multiple draining sinuses through the entire length of the left forearm. Both legs are markedly flexed and adducted. It is very difficult for the patient to separate his knees.

"X-ray taken of the pelvis showed partial destruction of both femoral heads with patheological dislocation upward of both hip joints. An X-ray of the left forearm showed marked hypertrophic new bone formation throughout the entire extent of the ulna radius. The dead shaft could be identified throughout the major portion of this new bone and there were a dozen or more draining sinuses over the region of the radius on the extensor surface of the forearm. The upper end of the radius was completely dislocated as shown by the X-ray, and could be easily felt subcutaneously at the elbow. X-ray of the lower third of the right femur showed an old osteomyelitis with possible sequestration. The knee joints were not involved, nor were the elbows or wrist joints. The white blood count was 16,000, red blood count, 3,500,000, Polys 80 per cent, Homo 60 per cent, temperature 99, and pulse 115, upon admission.

"This patient is in a rather bad way at the present time. The most serious lesion as I see it, is in the hip joints. While these can still possibly be pulled down into somewhat near normal position, and the leg straightened, it is questionable whether or not he will still have motion. It would seem that there is so much destruction that ankylosis of both hip joints is inevitable. It will be our plan to straighten both legs by continuous traction in bed, and to do an extensive sequestrectomy of the left forearm and pack with gauze and apply a cast from the wrist to the upper arm, with the forearm in right angle position. After the legs are straightened, if the condition of the patient is such that we think it worthwhile, we will do a clean-up operation on the various sinuses and apply a cast. I would say that a minimum of a month to six weeks will be needed. The patient is indeed in a bad way and must have something done."

Case No. II

"Aged about three years. Diagnosis, bowed legs. The bowing was overcorrected, casts applied and he has made a splendid recovery."

Case No. III

"Age two years, nine months. Picture shows a marked lordosis. X-ray revealed a congenital dislocation of both hips. Recently treatment was begun. Traction was applied for a week. Reduction was then successfully made and the legs and hip put in casts. We expect complete restoration of this child. This case is unusual in that statistics show that only 20 per cent of congenital dislocations are bilateral and only 30 per cent occur in boys."

In conclusion, we wish to state first that our great state of South Dakota is becoming more

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Acute Infectious Mononucleosis*

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ONE day last May, I received a letter that went far to spoil an otherwise lovely spring morning. This communication concerned a girl of 13 years who had been unable to keep up at school. The blood count worried me: Hgb., 68%; R.B.C., 4,100,000; W.B.C., 14,000; Neut., 8; Lympho., 90; Trans., 2. A lymphocytosis, especially in the young, does not always indicate leukemia. But the anemia and a white cell count of 14,000 with lymphocytosis made an ominous picture.

The patient, who came in a few days later, looked as fragile as a porcelain vase. Her story was brief: For two weeks she had not been able to attend school because of fatigue, and had spent the last five days resting in bed. She was the oldest of four children; the others were perfectly well. The family history was irrelevant. At school she was unusually active, both on the playground and in the class room. There was no record of weight loss nor any serious illness. Menstruation had not begun. About a year ago she had an upset similar to the present one, but after the summer vacation seemed quite well. The present illness was characterized by marked weakness, and, for a few days, fever as high as 102° by mouth. A week before coming to the hospital there had been tender swellings on both sides of the neck.

When first seen, the patient had been ill two weeks, and the blood count mentioned above had been done the week before. She weighed 113½ pounds. Temperature was normal, pulse 72, respiration 20. She was tall, thin, and pale but not acutely ill.

For the sake of brevity the only significant findings are mentioned: Teeth were clean, gums in good condition with no signs of bleeding. Superficial lymph nodes: The right side showed two or three nodes less than 0.5 cm. in diameter in the posterior triangle. On the left side there were several nodes a trifle larger similarly placed. No palpable nodes in the right axilla. One node a centimeter in diameter was found in the left axilla. No epitrochlear nor inguinal nodes were felt. Heart and lungs were normal. Blood pressure 100 65. Spleen and liver were not felt. The urine was negative.

The patient was sure that the lymph nodes which had been tender were getting smaller. Tender nodes in lymphatic leukemia are unusual, nor are they prone to get smaller in the early stages of the disease. The anemia is, of course, a usual finding in leukemia. Our blood count was: Hgb., 88 per cent; R. B. C., 5,400,000; W. B. C., 8,500; platelets, 225,000; Neut., 19; Lympho., 73; Mono., 3, and "smudges," 5. This was good news. The material drop in leucocytes went far toward ruling out leukemia, and the anemia was insignificant. The platelets were within normal limits, whereas they are usually low in leukemia. A polymorphonuclear count of 19 per cent is alarming but such counts do occur in acute infective mononucleosis. Seventy-three per cent lymphocytes is quite in order, too. Most of these cells were large. We have not been in the habit of differentiating between large and small lymphocytes as the results may be misleading.

Would we dare to make a diagnosis of acute infective mononucleosis with only three monocytes present? Certainly, and this brings us to a most interesting point, brought out by Ordway and Gorham,[2] to wit, the predominating cell is not always a monocyte but an abnormal lymphocyte. In passing, it might be well to mention that it is not easy to be sure of monocytes especially if there are many large lymphocytes present.

The girl did well and within two weeks her hemoglobin was 95 per cent, and leucocytes had dropped to 4,700. The glands steadily became smaller; the spleen was palpable at the costal margin just once. The anemia, in this instance, was one of those little details that nature sometimes throws in to make our problems more complex, as in mononucleosis we do not expect it. When last seen six months after admission, the hemoglobin was 95 per cent; leucocytes, 200, and polymorphonuclears, 48 per cent. She had gained seven pounds and looked well. Neither spleen nor lymph nodes were palpable.

I've taken some time to describe this patient as she illustrates some of the problems and difficulties of making an early diagnosis. She did not

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come to the hospital until after the worst of her illness. This is the rule rather than the exception in this disease. The individual may not be impressed and there are probably many who do not see a physician.

The records in the Presbyterian Hospital for the last 18 years contain 31 cases which may, with safety, be classified as acute infectious mononucleosis. Six of Longcope's[3] patients, which are not mentioned, were in the hospital at this time. In addition to these there were about 20 patients that might be included in this series except for the fact that they did not show up in time for adequate observation. At no time was there anything resembling an epidemic and as a rule the patients came in singly. They were not very sick and 12 days was the usual length of time in bed or in the hospital. There is no doubt about the fact that epidemics do occur. Tidy and Daniel[4] reported an astonishing series of 23 boys in a school of only 30 boys, and one master ill.

31 Cases

Age: Average, 24 years; youngest, 9; oldest, 40; 6 were 30 years or older, therefore 25 or 80 per cent were under 30.

Sex: Males 16, females 15.

Onset: The average number of days before reporting to a physician was 10.

In Bed: Average was 12 days.

Fever: 30 patients had fever (96 per cent).

Enlarged Nodes: 30 patients had enlarged nodes (96 per cent).

Spleen: palpable in 21 patients or 70 per cent.

Sore Throat: 17 patients had sore throat (56 per cent).

Blood Counts

White Cells: Below 10,000, 2 or 6.5%.
10,000—15,000, 13 or 42%.
15,000—20,000, 10 or 32.2%.
20,000—25,000, 6 or 19.3%.

Lymphocytes: Below 65%, 5 or 16.2%.
Between 65—75%, 5 or 16.2%.
Between 75—85%, 18 or 58.0%.
Between 85—95%, 3 or 9.6%.

Anaemia: Was never marked and only noted in 4 patients.

Occupations Represented: nurses, 7; stenographers, clerks, etc., 7; students at school or college, 5; aviators, 2; physicians, 2; housewives, brokers, chauffeurs, etc., 7; only one patient was a medical student.

These statistics are not what would be expected. In an institution of this kind we certainly would look for more patients from among the ranks of medical students and doctors. The fact that there are over 60 nurses in the various hospitals associated together and approximately only 400 medical students is only a partial explanation. There are about 250 nurses in the training school. These young women are very carefully supervised and promptly sent into the hospital if ill. It is not so easy to keep track of the medical students who, when sick, may go home or to their own physicians. Of course, we know they are ill and probably see the blood but have no opportunity to study the patient. Without doubt there have been more cases of mononucleosis among the students than these records show, but they have not been seen by me nor officially entered on the hospital records.

Summary of Findings

1. All but one patient had fever.
2. All but one patient had enlarged lymph nodes and 21 patients had palpable spleens.
3. Twenty-three patients (76%) had white cell counts of between 10,000 and 20,000.
4. Eighteen, or 58%, of the patients had from 75—85% lymphocytes.
5. Seven (22%) of the patients were nurses, this was the largest number from any occupation. There were only two doctors and one medical student.

These observations check well with the findings of other observers.

The Diagnosis

In retrospect it is usually easy, but when the patient is first seen the symptoms are frequently alarming. Before a blood count is done, influenza is the most likely diagnosis; Longcope[3] noticed that lymphocytosis is sometimes delayed. With a high white count and lymphocytosis, nodes, and fever, one is bound to think of acute leukemia. To be sure, the patient with leukemia is likely to be sicker; nevertheless, it is difficult to rule it out, especially in the earlier stages. Therefore, caution is indicated before giving a gloomy prognosis. Türk[5] himself, made this mistake and diagnosed a case of acute infectious mononucleosis as acute leukemia.

With sore throat and temperature the diagnosis of Vincent's angina is likely. If the throat is not sore, typhoid fever, tuberculosis and even Hodgkin's disease have to be excluded. The final diagnosis really depends on a careful study of the blood. There is always a leucocytosis and marked increase in large lymphocytes. While the monocytes may or may not be numerous, lymphoblasts are, according to Downey,[6] never present. Right now we tread along one of the most dangerous paths in hematology.

The average practitioner will do well to leave these academic discussions to the hematologist

who spends his time in the laboratory and at the microscope. I, for one, feel very little security when it comes to differentiating between a lymphoblast, a myeloblast and a young monocyte.

Although Downey and McKinley[6] wrote their paper eleven years ago there is no better study of this blood picture. Downey says, "a relatively large number of atypical 'leukocytoid' lymphocytes," are always present, and that "in every case it was possible to determine the nonleukemic nature of the blood, even though the clinical picture suggested acute leukemia."

Few of us are fortunate enough to approach a blood smear with the confidence of Dr. Downey; but the absence of lymphoblasts and the presence of these lymphoid cells usually indicates the correct diagnosis.

The white cells in mononucleosis rarely reach 30,000, but have been, reported up to 46,000. The count does not stay up, whereas in acute leukemia the leucocytes remain well above 30,000 and tend to go higher, sometimes rapidly, so it is necessary to watch the blood for a few days.

Recent investigations have given us a most valuable diagnostic method which is not complex nor does it require elaborate laboratory technique. It is the agglutination of sheep cells by the serum of these patients, first noted by Paul and Bunnell.[7]

Bernstein's[8] excellent papers, published within the year, describe the method and results which he has obtained. It appears to be especially valuable in ruling out leukemia. At the Presbyterian Hospital our series is too small at present to be significant, but we are convinced that it is a welcome aid to correct diagnosis.

Therapy

It is never wise for a physician to admit that his skill as a practitioner of the art of healing is limited. But, if he is honest, he will do well to restrict his enthusiasm for unpleasant therapeutic measures in treating this condition. Rest, quiet, treatment of the throat, gargles and irrigations, and mild sedatives are all that are required to effect a cure. The prognosis is, of course, excellent. Tidy and Daniel[4] noticed bloody urine but reported no cases where there was permanent kidney damage.

Etiology

Numerous suggestions as to the causative factor have been made, but to date no hypothesis has been backed up by sufficient data to warrant its acceptance. Fever, lymphadenitis, enlargement of the spleen, characteristic blood count, and especially the agglutination of sheep cells, indicate some specific toxic agent. For the sake of argument let us consider three possibilities: (1), a single organism; (2), two or more organisms working together; (3), a virus. Although various bacteria have been found, none has been isolated from a sufficiently large number of cases to prove conclusive. The hemolytic streptococcus has been under suspicion, and it is interesting to speculate on its presence in the epidemic reported by Tidy and Daniel.[4] However, these observers made no mention of bacteriology. We have by no means always found it in our patients. The idea of more than one organism causing this clinical picture may be worth considering. Such a possibility is weak because from a bacteriological standpoint it is unsound. Of the three suggestions, the filtrable virus is the most intriguing, and I favor it, but am willing to admit my case is far from proved.

There is a growing tendency to separate mononucleosis and glandular fever into different classes. If one goes over the literature and studies the cases reported, it does appear that some of the epidemics among boys and girls may well be different from the typical mononucleosis. Perhaps there have been cases called glandular fever which at the present time would not be classified as mononucleosis. Until our knowledge is more definite it is advisable to proceed slowly lest we add to, rather than detract from, the present confusion of terms. The solution of the problem seems to depend on the bacteriologists.

The fact that we are dealing with a relatively rare and not dangerous disease tends to discourage research. But, when we consider acute leukemia and its similarity to mononucleosis the reason for more careful study in this field becomes obvious.

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The Mechanistic Conception of Sciatica*

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LOW back pain, lumbosacral pain, lumbago, sacroiliac pain, and sciatica are clinical problems which interest practically every member of the medical profession because of their frequency and their resistance to treatment, and because they are clinical manifestations of a large number of disease entities. Lumbasacral or sacroiliac pain may be the first subjective evidence of a condition which, weeks, months, or even years later, may be manifested by the clinical symptoms and signs of sciatic neuralgia or sciatic neuritis.

The number of factors which may cause sciatica is legion. Constitutional diseases including syphilis of the central nervous system, diabetes, and gout may present symptoms of sciatica. Toxic neuritis resulting from the absorption of lead, arsenic and alcohol may be the primary pathology. Neoplasms, benign or malignant, and various infections of the spinal cord, cauda equina, meninges, and vertebral column may irritate nerve fibers which enter into the formation of the sciatic nerve. Fractures and dislocations of the lower dorsal and lumbar segments of the spine, Charcot spine, senile spine, and vertebral collapse from Paget's disease, osteitis fibrosa cystica, and hyperparathyroidism may cause sciatic pain. The sciatic nerve may also be irritated by various infections and neoplasms of the pelvis and pelvic organs and for this reason pelvic and rectal examinations should not be neglected. Sacroiliac lesions not infrequently register pain through irritation of the lumbosacral cord. Neurofibromas and metastatic infiltrating malignancies along the course of the nerve may be the underlying causes.

In the great majority of cases of sciatic pain, however, no causes of the above nature can be demonstrated. This type of sciatica is often termed essential, idiopathic, or sciatic scoliosis.

The object of this brief paper is to emphasize the fact that a very large percentage of patients with idiopathic sciatica present a very obvious and definite etiology if the lumbosacral segment of the spine is carefully and accurately examined clinically and radiologically; and that the clinical manifestations are the result of irritation of the fifth lumbar spinal nerve.

Goldthwait was the first to investigate the problem from a mechanical and anatomical standpoint and his thesis, "The Lumbo-Sacral Articulation: An Explanation of Many Cases of 'Lumbago,' 'Sciatica,' and 'Paraplegia,'" published in 1911, remains as a classic in medical literature. Von Lackum, Danforth, Wilson, Ayers, Putti, MacKinnon, Ghormley, Williams, Willis, Yglesias, and many other men have studied and emphasized the importance of lumbosacral pathology in the production of sciatic pain.

The sciatic nerve is the longest nerve in the body, and its component fibers are derived from the anterior divisions of the fourth and fifth lumbar and the first, second, and third sacral nerves. One must bear in mind that the spinal cord ends at the level of the lower border of the body of the first lumbar vertebra, and that the spinal nerves originate from segments in the cord some distance above where they make their exit from the spinal foramina. The lower part of the eleventh dorsal spinous process and the space below it are opposite the lower three lumbar segments, and the twelfth dorsal spinous process and the space below it are opposite the sacral segments (Davis). Irritation of neurons of the nerve roots, the spinal nerves, the lumbosacral cord, and the lumbosacral plexus which enter into the formation of the sciatic nerve, may produce sciatica. A lesion involving the lower dorsal spine may irritate nerve fibers which contribute to the sciatic nerve; and for this reason, the radiographic studies of patients with unexplained sciatica should include the lower dorsal region as well as the lumbo-sacro-iliac regions, and pelvis.

The patient with only subjective symptoms resulting from the irritation presents sciatic neuralgia while the patient with both subjective symptoms and definite findings of motor or sensory changes of the affected nerve fibers has a sciatic neuritis. Tender pressure points along the course of the nerve, hamstring contracture, painful extension of the leg on the flexed thigh, local adiposity, lessened temperature, and atrophy

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on the affected side are other neurologic phenomena which are a part of the clinical manifestations. There is frequently lumbar muscle spasm and a list of the spine either toward (homologous) or away from (crossed form) the side of the sciatica. An alternating type of sciatic scolosis may infrequently be observed. There is no constant relationship between the affected extremity and the direction of the spinal list.

Sciatica is a disease of adult life, and affects men more often than women. The majority of the patients belong to the sthenic constitutional type and appear to be in good general health. There may or may not be a history of preceding trauma and exposure. The original pain and tenderness are usually localized to the lumbosacral, sacroiliac and gluteal regions, or are described by the patient as lumbago. After a variable period of time, weeks, months, or even years, the pain may leave the lumbo-sacro-iliac regions and appear in the thigh, leg, and foot. Frequently the patient does not associate the pain in the lower extremity with the former low back symptoms. The onset may be sudden and acute, or it may be insidious. The pain may be mild or severe and even excruciating. The symptoms may be continuous or spasmodic and aggravated by movements of the spine or lower extremity, coughing, sneezing, and turning over in bed. Attacks of pain may last for several hours, days, weeks, or even months and years. A marked list of the spine may exist either toward or away from the affected side and not infrequently the patient is unaware of its presence. The patient may be ambulatory and attempting to continue his occupation or he may be totally incapacitated and confined to his bed. The pain is usually unilateral and rarely requires morphine for relief. When the sciatic pain is bilateral and is relieved only by morphine then a tumor of the meninges, spinal cord, or cauda equina should always be suspected.

If the subjective symptoms and the objective neurological findings of patients with unexplained sciatica are practically confined to the distribution of the fifth lumbar nerve, then it is logical to conclude that the region of the irritation is proximal to the point at which the fifth lumbar nerve enters into the formation of the lumbosacral cord and plexus. This region is the lumbosacral segment of the vertebral column since the fifth lumbar nerve exits from the spine by way of the intervertebral foramen between the fifth lumbar vertebra and the sacrum. The fifth lumbar nerve supplies motor fibers to the quadratus lumborum and the deep muscles of the back through the posterior division while the gluteal muscles, tensor fasciae latae, hamstring muscles and all of the leg muscles except the gastrocnemius and soleus are innervated by the anterior division of the fifth lumbar nerve. Many of the clinical manifestations of pain, tenderness, contractures, muscle spasm, and paresis can be explained by these anatomical facts. Cutaneous sensory fibers of the fifth lumbar nerve are distributed to the posterolateral aspect of the knee, leg, ankle, and dorsum of the foot by way of branches of the common peroneal nerve. Sensory changes over these areas as well as a diminished or lost Achilles reflex are clinical signs of a neuritis of the fifth lumbar nerve.

Clinical studies of this group of patients should include a detailed examination of the lumbosacral segment of the spine. The physician must be familiar not only with the pathological anatomy of this region, but also with the normal anatomy and physiology. The lumbosacral region is an intrinsically weak and unstable mechanism because of the following reasons:

1. The lumbosacral region is an area of transition; the numerous and various congenital anomalies may be considered as phylogenetic handicaps to man.

2. Congenital abnormalities of the lumbosacral region occur in approximately 35 per cent of all individuals. They favor an architecturally weak back.

3. The adult spine has undergone considerable change in its ontogenetic development. The lumbosacral curve begins to form as the child starts to develop the apparatus and functions of locomotion.

4. It is the site of a tremendous shearing strain since the lumbosacral articulation inclines downward and forward. The spine would slide forward in relation to the sacrum were it not for the presence of various supporting structures, (Fig. Ia and II).

5. The bony supporting structure is provided by the locked arrangement between the inferior articular facets of the fifth lumbar vertebra above and the superior articular facets of the sacrum below (Fig. Ia and II).

6. This bony anchorage is lost if a defect or loss of bony continuity exists in the region of the isthmus or pars interarticularis (Chandler) of the fifth lumbar neural arch (Fig. Ia-b).

7. Solution of bony continuity through the

isthmus of the neural arch may be a congenital defect or an ununited fracture.

8. Willis found this defect present in 4.28 per cent of over 700 skeletons which he studied.

9. The lumbosacral region is the juncture of a mobile spine and an immobile sacrum.

10. The lumbosacral articulation is subject to more physiological trauma than any other region of the vertebral column.

The fifth lumbar nerve leaves the spine through the lumbosacral intervertebral foramen, and it is obvious that the nerve may be irritated by any lesion which interferes with its entrance, passage or exit through this bony canal. The original low back subjective symptoms correspond to the distribution of the gluteal nerves and branches of the posterior division since they are the most peripherally placed and would ultimately produce subjective and objective findings corresponding to the entire distribution of the fifth lumbar nerve. These patients are not infrequently treated for a long period of time for sciatica without a clear knowledge of the underlying and primary pathology at the lumbosacral region.

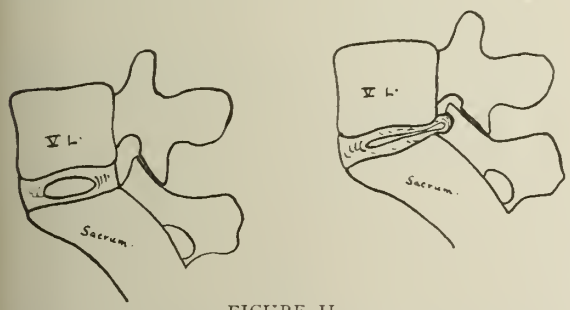
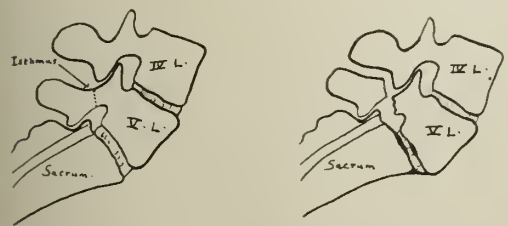


FIGURE II

Diagramatic drawing which demonstrates that any lesion which causes a collapse of the lumbosacral intervertebral disc also causes a subluxation of the posterior facet articulation and a narrowing of the corresponding intervertebral foramen through which the fifth lumbar spinal nerve passes.



Ia Ib

FIGURE Ia

Lateral view of lumbosacral region of vertebral column showing the isthmus or pars interarticularis of the neural arch and the bony anchorage between the inferior articular facet of the fifth lumbar vertebra and superior articular facet of the sacrum which prevents the spine from displacing forward upon the sacrum.

FIGURE Ib

Spondylolisthesis or forward displacement of the spine in relation to the sacrum with resulting narrowing of the intervertebral disc and alteration of the lumbosacral intervertebral foramen through which the fifth lumbar spinal nerve exits.

The following list of lesions may alter the architecture of the lumbosacral region and interfere with the passage of the fifth lumbar nerve through the lumbosacral foramen:

1. Congenital anomalies which constrict or narrow the intervertebral foramen.
2. Spondylolysis, potential or pre-spondylolisthesis (solution of bony continuity of the isthmus or pars interarticularis of the neural arch without displacement).
3. Spondylolisthesis (Fig. Ia-b).
4. Lumbosacral tuberculosis.
5. Lumbosacral osteomyelitis.
6. Lumbosacral fractures.
7. Lumbosacral dislocations.
8. Lumbosacral arthritis.
9. Lumbosacral neoplasms.
10. Rupture of the nucleus pulposus.
11. Ecchondrosis physalifora (chordoma).
12. Postural narrowing of the lumbosacral disc.
13. Lumbosacral collapse from constitutional diseases such as osteitis fibrosa cystica, Paget's disease.
14. Lumbosacral collapse from endocrine disease such as hyperparathyroidism.

The irritation of the fifth lumbar nerve may be caused by pressure, constriction, stretching, and toxic or chemical factors. A detailed discussion of each one of the lesions included in the above list is not possible in this brief paper.

The mechanism which produces the nerve irritation is very similar in many instances, and I wish to review briefly certain anatomical factors which are important in explaining this conception (Fig. II). Danforth and Wilson studied the sizes of the lumbar intravertebral foramina in relation to the sizes of the spinal nerves passing through them. They demonstrated that, "the foramen between the fifth lumbar vertebra and the sacrum is always the smallest, that between the fourth and fifth vertebrae the next larger, and that between the third and fourth usually the next, although the second and third were about equal. Quite contrary to the size of the foramen of canal is the size of the nerve root enclosed. The fifth was always the largest, the fourth next to the largest and the third next smaller as a rule, although sometimes the second and third roots were about equal in size. Otherwise expressed, the largest nerve (the

fifth) always had the smallest canal, and frequently it almost filled the canal."

The posterior wall of the intervertebral foramen consists of the articulation between the inferior facet of the fifth lumbar vertebra and the superior articular facet of the sacrum and its capsule. This is the only true anatomical joint at the lumbosacral level. The joint formed by the facets is provided with articular hyaline cartilage, synovial lining, synovial fluid and a capsule. It is subject to the same pathological anatomy as any one of the true joints.

There are 23 adult intervertebral discs and each one is composed of three distinct parts: (1) the nucleus pulposus; (2) the annulus fibrosus, and (3) the cartilage plates. Normal and pathological anatomy of the intervertebral disc has received considerable study during the past eight years following the report in 1927 of the late Professor Schmorl of Dresden on prolapse of the nucleus pulposus. Schmorl found that nuclear prolapses were present in 38 per cent of more than 5,000 spines which he had studied at autopsy. The nucleus pulposus is a fibrogelatinous material formed by the proliferation and degeneration of the embryonic notochord cells. It is the medium of transmitting pressure from one vertebra to the next; it acts as a shock absorber which diminishes the effects of stress and strain. Any disease or lesion which weakens the structures which confine the nucleus may cause a prolapse of the nuclear material with a resulting collapse of the intervertebral disc. The nucleus may rupture into the spongiosa of the vertebral body or it may protrude into the spinal canal. Ribbert in 1895 demonstrated that the Virchow tumor, known as ecchondrosis physalifora or chordoma, could be produced experimentally in the rabbit by puncturing the intervertebral ligament and permitting a portion of the nucleus pulposus to escape. Keyes and Compere have confirmed the work of Schmorl, and the reader is referred to their excellent publications for further information. Figure 1 shows diagramatically that a rupture of the nucleus pulposus in the lumbosacral intervertebral disc causes narrowing of the disc and a subluxation of the facet articulation, and constriction of the intervertebral foramen through which the fifth lumbar spinal nerve exits from the vertebral column. The intervertebral disc is without nerve supply and consequently involvement of the disc in itself is not painful.

Within the bony canal the fifth lumbar nerve is not bathed by spinal fluid but it is surrounded by a relatively vascular network of veins. Narrowing or settling of the lumbosacral intervertebral disc resulting from trauma, infection, neoplasm, or arthritis is necessarily accompanied with a subluxation of the joint formed by the articular facets. The subluxation narrows the intervertebral canal. Also the size of the canal may be diminished by synovitis and effusion of the facet articulation which forms a part of the posterior wall of the canal. The subluxation and synovitis or arthritis of the joint creates a congestion of the venous plexus which surrounds the nerve. Putti emphasizes the importance of establishing hyperemia by various means to lessen the pressure within the canal created by the venous congestion. Ghormley refers to this chain of events as the "facet syndrome" and he has described a special radiographic technic which may reveal definite pathological conditions affecting the facet articulation. It seems quite logical to postulate that any condition which narrows the passage way through the bony canal or intervertebral foramen may cause sciatic pain.

Hyperextension of the spine narrows while flexion at the lumbosacral articulation enlarges the intervertebral foramina. Lateral flexion to the right diminishes the right and enlarges the size of the left foramen. It is conceivable that sudden and forceful hyperextension and lateral flexion movements may explain many cases of low back pain and sciatica. This mechanism must not be uncommon particularly when an arthritic process is present in the posterior lumbosacral articulations at the time of the trauma.

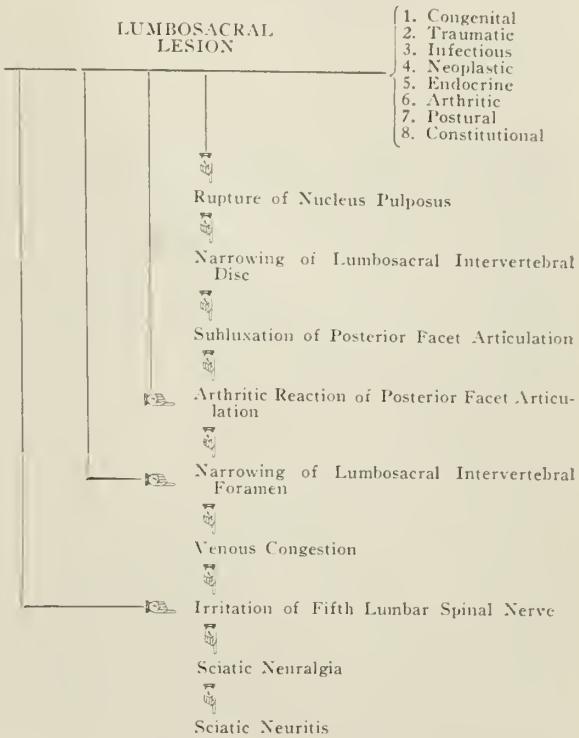
The fifth lumbar nerve after emerging from the lumbosacral intervertebral bony canal lies in direct contact with the lateral margin of the inferior surface of the fifth lumbar vertebra, the intervertebral disc and the lateral margin of the superior articular surface of the sacrum. Arthritic lipping along the lateral inferior border of the fifth lumbar vertebra or the superior surface of the sacrum may irritate the fifth lumbar nerve. This level is proximal to the point where the fifth lumbar nerve joins the fourth lumbar nerve to form the lumbosacral cord. Hypertrophic changes and spur formations may be localized at this region and radiographic studies may not demonstrate the pathology unless a true anterior-posterior study is made.

Neuralgia or neuritis of the fifth lumbar nerve can usually be demonstrated by a careful clinical examination. The nature of the underlying lumbosacral lesion, however, cannot be

determined without proper radiographic studies in the anteroposterior, oblique, and lateral planes. The lateral radiogram should center over the lumbosacral articulation and the spine should be horizontal and not in a sagging position. A lateral radiogram will reveal the degree of the lumbosacral angle and this information will aid in determining the position of the x-ray tube while making the anterior-posterior study, since the central rays should pass directly through and parallel with the lumbosacral articulation. Slight obliquity of the rays may distort the study so that an accurate interpretation can not be made. While the radiograms are being made, the pelvis should be on a transverse plane, the spine straight, and the extremities parallel and extended.

The treatment can be mentioned only in a very general way since each patient will present individual problems. All sound types of therapy, however, are based upon the fundamental principles of physiological rest and hyperemia. One program of treatment may be most conservative while another may include radical surgical methods. The principle of hyperemia may be applied by the application of numerous physiotherapeutic methods. Electric pads, hot water bottles, hot towels, hot tub baths, contrast baths, diathermy, radiation therapy and massage not infrequently provide considerable relief from the subjective symptoms. The principle of physiological rest may be supplied conservatively by such measures as various types of corsets, back braces, plaster of paris back supports, plaster of paris hip spica, bed rest and epidural injections. Many patients who received no benefit from conservative methods have been grateful for the relief of pain and disability obtained from the more radical or perhaps conservative surgical procedure of lumbosacral spinal fusion which provides absolute immobilization and rest of the affected area. Lumbosacral spinal fusion may be combined with a resection of the articular facets on the affected side. This procedure, facetectomy, removes the posterior wall of the bony canal or intervertebral foramen and lessens the pressure upon the fifth lumbar nerve. Facetectomy has been advised and described by Putti, Ghormley, Williams, Yglesias, and Mitchell. Chordotomy or sectioning of the anterolateral column of the spinal cord for the relief of somatic pain may be indicated in the rare instance when the sciatic pain can not be controlled or relieved by the more conservative methods.

The main purpose in presenting this brief paper is to review the mechanistic conception of the pathogenesis of many cases of sciatica or fifth lumbar neuralgia and neuritis. What I have attempted to review in my paper may be diagrammatically expressed as follows:



The same mechanism may explain irritation of other spinal nerves. It is a well known clinical observation that vertebral lesions which are associated with a narrowing of the intervertebral disc are usually more painful and disabling than when the disc is not affected. The disc itself is without nerve supply and its collapse would be symptomless were it not for the concomitant mechanical alterations of the vertebral column and particularly the subluxation of the posterior facet articulation, narrowing of the intervertebral foramen and irritation of the corresponding spinal nerve.

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(Continued on Page 320)

Group Hospitalization Periodic Payment Plan forPurchases of Hospital Care

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DEFINITION: This is a plan by which self-supporting persons budget their hospital costs and pay for them the same as they do all other items that enter into the maintenance of life. It involves neither charity nor profit. It provides the means whereby the individual pays through co-operative effort the entire cost to the hospital for such services as it is called upon to render.

Why has this agitation developed just now? The answer is:

1. Inability of middle class to pay for hospital care during these times.

2. Financial crisis among hospitals.

The first may be relieved by bringing the cost of hospital care within the reach of the individual by having a great many individuals contribute small sums for the establishment of a fund out of which the bills of the unfortunate ones are paid. This is simply applying the insurance principle, but insurance which is strictly mutual and which excludes completely the profit element.

The second will be relieved by added paid-for patronage.

The present tendency in American society is doubtless to provide greater security all along the line and yet to preserve the element of initiative and self-respect to the individual. Group hospitalization aims to satisfy this tendency in the health field.

There are, however, certain requirements that any such plan must meet if it is to satisfy the people that it purports to serve and at the same time safeguard the institutions that deliver the service. These may be stated as follows:

1. The plan must be broad enough so that it provides adequate care for those who become members.

2. It must provide adequate returns to the hospitals that deliver the service.

3. It must not be so liberal that the central fund is endangered.

4. It must preserve the normal and traditional relationship between the physician and the patient.

5. It must be free from all commercial intervention.

6. It must recognize always the close relationship of the hospital and the physician and must carefully avoid anything out of harmony with the medical code of ethics which has been developed for the protection of the patient.

Let us apply the plan as it is usually operated in cities that have adopted it and see how well it meets the requirements set forth above.

1. Adequacy to the patient.

At a cost of seventy-five cents or less it provides hospital care for a period of twenty-one days covering all diseases usually cared for in general hospitals. Provides only for in-patients. All diagnostic procedures are doctors' prerogatives and are not included in hospital care. There are no exceptions in the case of routine procedures. X-ray and special laboratory examinations are regarded as diagnostic procedures and are charged for at a reduced rate. Members of the family may participate by contributing an additional fee.

2. Adequate return to the hospital.

The hospital is paid a per diem rate equal to the cost of hospital service in that community. In many cases the actual hospital bill based on normal charges is submitted and paid. Likewise all discounts made under the plan are reimbursed to the hospital.

3. The plan must not be so liberal that the fund is bankrupted. Hospital costs must be kept down. Payments to hospital must be limited to the capacity of the fund.

4. It must preserve the normal relationship between doctor and patient.

The patient makes his own selection of doctor and hospital. There is nothing in the contract which directs him how to select except that he must choose within the ethical group of M.D.

5. It must be free from commercial intervention: The plan is handled by the participating hospitals as a co-operative venture. No commercial agency is permitted to handle the project on a commission or contract basis.

6. The hospital does not enter the field of the practice of medicine. All such procedures are excluded. Close co-operation between doctor and

(*Continued on Page 320*)

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Psychoanalysis: A Brief Resume of Its Meaning and Methods

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"There Is No Vice Half So Bad As the Means We Take to Conceal it."—Rochefaucauld.

Definition

IN THE Encyclopedia Britannica, Freud himself has given an account of the whole movement, and there he tells us that by "psychoanalysis" one can legitimately speak of two things: (1) a certain method of treating certain types of so-called nervous disorders, and (2) a method of research for the understanding of unconscious processes and of their relative influence on human behavior.

The first is a specific applied situation; the second a general one indicating the applicability of psychoanalytic concepts to a great number of human interests, such as art, literature, religion, law and, in fact, anything in which man and his fellows meet.

Psychoanalysis must not be confused with psychology. It is not the whole of psychology as many readers as well as writers of modern fiction seem to suppose. It may, however, be regarded as a part of psychology or a contribution to psychology. Psychoanalysis has given the Socratic dictum "know thyself" a broader meaning.

Psychoanalysis has called attention to the fact that the conscious personality is not the total personality. In other words, the self that we are aware of now is not our total or only self.

The Meaning of Psychoanalysis

In comparison with older schools of psychology, psychoanalysis contains new material and makes radical departures from other viewpoints. This matter may be summarized, according to Peck as follows:

(a) Psychoanalysis deals chiefly with the "unconscious" mental life, maintaining that the more important mental activity goes on outside the subject's awareness.

(b) It establishes *repression* as a central psychologic mechanism, meaning by repression a purposeful omission or elimination of mental material from consciousness. In normal states this mechanism disposes of what is unnecessary and inconvenient for consciousness. In abnormal states it takes care of what is intolerable and insolvable by consciousness. The difference between healthy and pathologic repression is chiefly one of degree. Healthy repression is a mechanism for efficient management of childish and asocial qualities which are common to all. Pathologic repression comes into play under special need, and is used to evade tendencies which are so potent and in such crude contrast to anything acceptable to consciousness that they cannot be disposed of by more constructive means. In both cases the material repressed remains in the unconscious. In the former it is integrated into the structure of the mental organization and is compatible with health. In the latter it remains unassimilated, is a source of inner mental disharmony, and is often the basis of neurosis and other maladjustment.

(c) Psychoanalysis recognizes unconscious mental conflict as a source of psychic difficulty. Conscious mental conflict is apparent to all. The conception that such conflict may go on completely outside the conscious grasp of the individual is distinctive to psychoanalysis.

(d) There is a new emphasis on infantile and child psychology, again stressing the unconscious features. Appropriate psychologic development of this early period is felt to establish patterns of reaction which insure satisfactory adult adjustments. On the other hand, failure in the solution of some basic developmental problems may result in their being carried over to adulthood, as a sort of unfinished business of the past, which complicates all later mental reactions.

Psychoanalysis has an energy concept of psychology analogous in a way to the energy concept of physics and, continuing in parallel, most of the energy manifestations of the psyche are derivatives from one common source, the procreative or sexual energy, designated as *libido*. In accordance with this concept, the so-called libido theory of Freud was developed as a central theme around which the elaborate structure of psychoanalysis has been built up.

Stripped to bare bones and given in merest outline, Freudian psychology, normal and abnormal, is explained by the libido development and its vicissitudes. Undifferentiated at birth,

the libido goes through an orderly course of evolution from the simple organization of the child to the complex organization of the adult. This libido development manifests itself in two planes; development in relation to *aim*, and development in relation to *object*. Aim development is concerned with the physical organism itself, and with the libidinal investment of various bodily systems. At birth the libido is diffusely and somewhat homogeneously attached to all body orifices, special senses, skin and musculature, which together are designated as infantile erogenous zones. From then until the age of four years, or thereabouts, a reorganization takes place in the nature of differentiation and specialization, until the libido investment is drained away from other organs and concentrated chiefly in the genitals. There is, then, later established, so far as aim is concerned, a harmonious organic whole, manifested in the so-called primacy of the genital zone, with subordinate co-ordination of the other erogenous zones. The aim organization of the libidi is illustrated objectively in the adult by the act of coitus. In this consummation of the love relation, the genital goal is supported by other preliminary physical contacts— caressing, looking, and so on.

Process of Analysis

During the treatment hours, the patient, so far as is possible, gives up self-direction of thought, lets his mind drift, and by means of speech, empties its content, so to speak, into the analysis. The analyst listens to this material, subjects it to the test of his own trained mind, objectively related to the problem, and attempts to determine what motives and elements lie behind. The patient complains that the analyst ignores the obvious, is suspicious of everything, and seeks deep and hidden meanings. The charge is true—in the neurotic, things are not what they seem, and it is the business of analysis to question everything. At times meanings are clear; very often they are obscure. Positive interpretation, when things are plain, and a questioning attitude when they are obscure, seem to make it possible for the patient to shed layer after layer of disguise, and come nearer and nearer to the real problems of his mental life. Even questioning and hypothesis proved later to be quite off the track apparently does no harm, and in a properly conducted analysis the patient himself sifts the wheat from the chaff.

The detail of analytic technique is changing and will change much more. Among other things, the single fact that most educated people are informed on psychoanalytic theory has made for revision of method. Formerly a memory reconstruction of life history and the revealing of formative mental mechanisms took first place. In this the casual features of the pathology were given first consideration. Now the emphasis is laid more on the analytic situation compounded of transference and resistance, i. e., the emotional experience rather than the intellectual one. The analysis furnishes, as it were, a small edition of the emotional life history of the subject, the inadequacies of which he learns through actual repetition. It is a truism that one cannot live his life a second time. In some respects, an analytic experience seems an exception to this rule. Certain poorly developed features of the emotional life are lived through a second time and thereby the subject is given another opportunity to do better with them.

A therapeutic analysis takes much time—from a few months to a year of daily interviews is common. It is not difficult to see that the time element is important. The method is educational rather than inspirational or conversional, and education takes time. For practical reasons, however, everything that shortcuts analytical procedure without sacrifice of accomplishment must be welcomed, and steps have been made in that direction.

Diagnosite analysis is often relatively simple. In many cases, after a few interviews the analyst grasps some of the more general features of psychopathology involved. This is nothing strange. After all, the main fundamental themes of human life are few, and the general lines of difficulty are much the same. But what the physician knows or thinks helps the patient very little. Somewhat as in the case of music or the fine arts in general, so in the art of mental adjustments, what a second person knows is only of value in helping the other to gain by his own experience. The matter, however simple in theoretical formulation, cannot be imparted by word of mouth.

To sum up the significance of psychoanalytic treatments, it is the belief of its advocates that the patient is given a unique and carefully worked out opportunity to change from emotional dependence to emotional independence, and to grow from his state of childishness to one nearer adulthood. His personality is organized on an imperfect but rigidly crystallized basis. Analysis is an attempt to reach deep down, to loosen or liquefy this structure, and to make possible thereby a reorganization on a new and better level. Massive experience in real life occasionally accomplishes this same thing. A great

love, some deep religious awakening, a sudden demand for duty and sacrifice, or a self-obliterating social movement, such as a "holy" war, may, as it were, lift an individual bodily from his own difficulties and leave him a changed man.

Obviously, the mass of neurotic and maladjusted people are not going to be cured by such accident of circumstance. Analysis is an attempt to accomplish by systematic, standardized measurable procedure what cannot be well left to the uncertain fate of spontaneous growth.

Repression

Freud's great contribution to curative psychology is centered around repression. He maintains that the conflict between the main personality and some experience of life is so strong that there is a definite method of getting rid of it. This is known as *repression.* The unpleasant memory is not lost but actively forgotten and driven down into the deeper layers of the unconscious mind to make a new center of activity. It is not dead but very much alive, though its life is abnormal and expresses itself indirectly. The manner of this expression depends on the amount of resistance which is offered to it in the personality. The stronger the resistance the more indirect is the path of expression and the more distorted the manifestation of the complex. Freud has invented the figure of the *censor* who stands on the threshold between the conscious and the unconscious "with the office of doorkeeper." He is always on guard lest the repressed and unpleasant experiences should get into consciousness. They manage occasionally, however, to escape his watchful eye in sleep, hypnotic and automatic states, or similar circumstances. But they always take a camouflaged form in order to get through into the conscious life. This makes their identification very difficult.

The Dream

Freud came to take up the scientific study of dreams in an empirical way since neurotics who were undergoing psychoanalytic treatment often related to him spontaneously dreams which were still intensively occupying them day by day. A closer examination of the content of these dreams revealed the fact that they stood in close relation to the agencies which caused the malady and that here again the infantile sexual roots were exhibited. In this way, Freud came to create the technique for the interpretation of dreams corresponding in its main features to the psychoanalytic method of investigation; this has become an indispensable part of the psychoanalytic therapy. The unconscious which lies at the bottom of the neurosis betrays itself in the dream, not undisguished to be sure, but in decipherable manner, so that the dream becomes the chief entrance, you might say the *"via regia,"* to the patient's unconscious.

All mechanisms which enter into the origin of neurotic symptoms have also a share in the formation of the dream. The incomprehensibility of the dream is, therefore, the same as that of neurotic symptoms; they are both the substitute expression for the sexual material, which has become unconscious through repression. In both cases we have to deal with incompletely repressed infantile sexual impulses and later sexual material which has joined these. Besides the infantile and sexual matters which furnish the real dream sources, the unnoticed daily happenings ("Tagesreste") with their numerous apparently indifferent details; to superficial observation, frequently seem to control the dream picture. Somatic stimuli and external irritations should not be overestimated as dream instigators; they can, indeed, instigate the dream, but always serve merely to clothe the unconscious wishes like all other recent material.

After profound investigation of his own dreams and those of neurotics, Freud, in the year 1900, could give in his "Traumdeutung" a detailed account of the characteristics of the dream. The most important discovery was that the dream regularly represents a wish-fulfillment, that is, it brings to representation in dramatic form an unconscious wish of the dreamer represented as fulfilled. In this an infantile wish is readily combined with an actual one. The wish characteristic may be easily recognized in isolated dreams if it is not apparent in the majority of the dreams of adults. On the contrary, the dreams of healthy children show as fulfilled their naïve simple wishes which have been active by day and remained unfulfilled. Numerous other dreams, especially such as anxiety and fear dreams, seem at first to be an argument against the universal validity of the wish theory. Naturally Freud could not escape this, but he has pointed out that the anxiety dream after being subject to penetrating interpretation likewise shows itself to be the representation of a suppressed (repressed) sexual wish, the disguise of which has failed.

One must not be led astray by the fact that the dream is joined in many ways to the events and impressions of the preceding day or evening. These connections are only superficial and have only loose, unimportant relations to the real dream-forming complexes. The true foundation

of the dream is furnished by the wishes of childhood which have become unattainable and stored away in the unconscious; these have normally disappeared into the unconscious because of psychosexual development. The particular dream-forming wishes which are fulfilled in the dream and can be disclosed only by the interpretation work show, in contrast to the manifest content, a logical and intelligible as well as effectively well-motivated train of thought which is organically connected with the rest of the mental life. The manifest dream remembered in the morning, on the contrary, is often without effect, disconnected, unintelligible, as strange to the waking consciousness as the delusions of the insane are to the normal consciousness. Thus one comes upon the fact that the dream is the expression of those old instinctive wishes later felt as painful (repressed), now returned to life again distorted by a complicated mechanism. Freud assumes that consciousness in the service of the repression activity of the ego continues working in the dream as a kind of psychic censor, not allowing those forbidden impulses to pass in full distinctness but only when disguished in speech and form. By this cultural limitation the appearance of painful emotions which would accompany the becoming fully conscious of the unconscious is avoided as a rule (compare on the contrary the failure of this dream tendency in the anxiety dream) and undisturbed peaceful sleep is protected. Thus, the dream proves—just the opposite of the common opinion—the real protector of sleep, against which the fact that it does not always accomplish this task (anxiety dreams) in no way militates. This tendency shows plainest in a group of dreams which have always been cited in support of the common theory that the dream pictures owe their origin merely to certain physical irritations. In the sense of the Freudian conception, a series of these dreams, the so-called satisfaction-dreams, afford the best proof of the dream characteristics declared by Freud to be universal, since these dreams represent a bodily need which appears in sleep (for example thirst) as gratified and thus serve to guard sleep. These dreams, like children's dreams, also plainly show the wish-fulfilling characteristic.

In his interpretation of the dream from its various elements, Freud has developed a veritable language of dream symbolism. Thus emperor and empress usually stand for the parents of the dreamer; prince or princess, for the dreamer himself. All long objects such as canes, umbrellas, limbs of trees indicate the penis, while boxes, caskets, closets correspond to the female body. These are only a few examples of the numerous dream symbols which the psychoanalysts regard as the first and most important technical aid to psychoanalytic dream interpretation.

The Limitations of Psychoanalysis

As to the limitations of psychoanalytic practice, Kessel and Hyman summarize them aptly as follows: "At the present time its practice is sharply limited to a small group of adequately trained physicians who cannot possibly handle more than a numerically inconsequential number of patients annually. A second group of limitations with regard to the patient may be subdivided into those relating to the psychiatric status and those relative to the patient's circumstances in life. With reference to the psychiatric status, the true psychoses, and drug addictions, including alcoholism, where the need is greatest, have the least expectation of assistance. The conditions which have responded favorably, in our experience, include the less ominous syndromes such as the anxiety or compulsion neuroses, the simple behavior problems, and conversion hysteria. It must be emphasized again that in the latter conditions the majority will usually yield to simple reassurance or suggestion of any type, and that only rarely, when the symptoms are persistent or debilitating, is the need for analytic therapy justified.

"Finally, circumstances other than psychiatric status limit the usefulness of this mode of therapy. Favorable results at the present time apparently cannot be obtained in patients beyond the age of 40. The candidate for therapy must also be in the proper ranges with regard to income so as to stand the expense of a form of therapy which requires attendance from three to six hours a week for well over a year at a fee which is rarely less than $3.00 an hour and frequently exceeds $10.00 an hour. Again, the patient must be the possessor of a plastic and trained intelligence, for our experience has been that as a general rule the patients are recruited from the professions or the arts and that the average man in the street is wholly unable to grasp or utilize this form of therapy. Despite our receptive attitude toward psychoanalysis as a form of therapy, in twelve years we have seen only a handful of patients who have benefited from their experiences."

Psychoanalytic Attitudes

In order to show the current attitudes toward psychoanalysis I can do no better than to quote

a recent editorial in the Journal of the American Medical Association:

"An evaluation of the Freudian contribution at this time is, no doubt, as difficult as it was fifteen years ago. The science, if it be a science, is still relatively new. As has been said, it is changing constantly. It is being submitted to intensive investigation in well controlled institutions and before scientific organizations. The initial act of revulsion, representing a puritanical response to the new point of view, is gradually being modified among those who are beginning to realize that the Freudian contribution is a significant one. Intellectual channels have been stirred by the importance of the psychoanalytic method for an understanding of human conduct. Dramatists, novelists and poets have reflected its methods in literature and in art.

"In the most recent volume of his book 'Our Times,' Mark Sullivan endeavors to determine the present attitude toward the Freudian doctrines. He realizes that the Freudian discussions have left some enduring effects, that they have revolutionized the treatment of the mentally ill, that they have led to freedom from self consciousness about talking of sex between the sexes, that they have broken down some of the false sentimentality about women, and that the conclusion is far from visible as far as actual evaluation of the Freudian doctrines is possible. Thus he cites two diverse points of view.

"As to judgments about Freudianism in 1932, Dr. Wm. A. White, head of Saint Elizabeth's Hospital, Washington, D. C., writes the author:

"'To my mind, Freud's greatness lies in his having evolved an entirely new point of view and a new method which will ultimately discover the facts which it is capable of discovering and discard the errors which are incident to its employment, just like any other scientific method or point of view... The whole situation in my mind is quite similar in its history to the development of anatomy and utilization of dissection. There was just the same feeling of outrage against the early anatomists who insisted upon dissecting the human body, and these same early anatomists discovered all sorts of things that were not so, and subsequently had to be corrected by future observations more accurately checked up. It is quite the same with the analysis of the human mind. It is equally resented, and I have no doubt mistakes are made in the same way.'

"Another eminent neurologist, Dr. Frederick Peterson of New York, in a letter to the author in 1932, declared, with italicized emphasis, that 'Freudianism is a voodoo religion characterized by obscene rites and human sacrifices.' He adds that psychoanalysis has in innumerable cases caused mental aberrations, insanity and suicide, and that much of the work of present day neurologists has come to be the 'reconstruction of unfortunate victims of Freudianism.'

"Far too many critics of psychoanalysis confuse the contribution of Freud himself, and of recognized scientists who have devoted themselves to this field, with the activities and actions of numerous charlatans who have taken advantage of the public interest in sex to exploit themselves either for commercial returns or for notoriety. It is important in criticizing psychoanalysis to distinguish clearly between the scientific investigator and the charlatan. It would be folly to deny that the work of Sigmund Freud is a fundamental contribution leading eventually toward greater happiness for mankind. It would be equally fallacious to assert that it is today an unmixed blessing. In view of the dynamic nature of the Freudian contribution, the physician will do well to concern himself with those aspects which touch the diagnosis and treatment of disease, and to recognize the necessity for controlled study which must finally come as a part of the established curriculums of universities."

As we have seen, medical men often oppose psychoanalysis because of the intangible nature of its methods. In conclusion let me quote Freud himself as he warned his students of this subtle danger. "You have been trained," he said to them, "to establish the functions and disturbances of the organism on an anatomical basis, to explain them in terms of chemistry and physics, and to regard them from a biological point of view; but no part of your interest has ever been directed to the mental aspects of life, in which, after all, the development of the marvelously complicated organism culminates. For this reason a psychological attitude of mind is foreign to you, and you are accustomed to regard it with suspicion, to deny it a scientific status, and to leave it to the general public, poets, mystics and philosophers. Now this limitation in you is undoubtedly detrimental to your medical efficiency; for on meeting a patient it is the mental aspects with which one first comes into contact... and I am afraid you will pay the penalty of having to yield a part of the curative influence at which you aim to the quacks, mystics and faith-healers whom you despise."

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Cutaneous Mycotic Infections and Contact Dermatitis

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one gram the second, third, fifth and seventh days. This drug has the ability of overcoming hypersensitiveness to a high degree. Cases that formerly extended over a period of several weeks commonly clear up in a week or ten days under its administration.

South Dakota Children Get a New Deal

(Continued from Page 305)

and more health minded; second, that never in the history of the state have so many physical defects in children been corrected; third, that in the New Deal on Health for the Children of South Dakota, some of our highest hopes are being realized.

The Mechanistic Conception of Sciatica

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Group Hospitalization Periodic Payment Plan for Purchases of Hospital Care

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hospital is necessary for success. The doctor admits and discharges. He will, therefore, be responsible for malingering or overstaying.

What now are the outstanding benefits to be derived from this plan?

1. Makes possible the budgeting on an assured basis the hazard of hospital care and puts this part of illness expense on the same basis as food, fuel and clothing.

2. Benefits the hospital by returning to it that patronage which has been lost through the depression. Increases patronage on a pay basis.

3. By providing prepaid hospital care, there is a reasonable assurance that there will be something left in the budget out of which to pay a physician's fee.

4. Preserves the self-respect and stimulates the individual initiative of the patient.

5. Is in harmony with the present tendency and if properly pursued will preclude developments along similar lines which might be hostile to the inherent interest of the hospitals, the doctors and the public itself.

What experience have we and what expectation of success?

More than 40 cities in the United States have such plans in operation. At Grinnell, Iowa, the plan has been in operation since 1923. Baylor University has operated a plan since 1929, and many commercial firms have had them in successful operation for many years. And several old line insurance companies are experimenting with the idea at the present time.

The plan is still in the experimental stage. It is generally agreed that when the plan is ultimately accepted by the public, the rates will be materially lowered and the services extended.

BOOK NOTICE

AN EXCELLENT TEXT IN PHYSICS

An Introductory Course in College Physics, by NEWTON HENRY BLACK, assistant professor of physics in Harvard University; first edition, cloth, 714 pages, illustrated: New York: The Macmillan Company: 1935. Price, $3.50.

It should not be inferred from the title of this work that it was written exclusively for college work. It was written, as the author declares, for anyone who wishes to have near him a means of recapitulation of the work in physics which he pursued in college; and it was undertaken with the physician and the engineer in mind.

Based upon the earlier Black & Davis *Practical Physics,* this new work is conservative in treatment and approach. It treats of Mechanics, Heat, Magnetism and Electricity, Sound, and Light, and is very creditably illustrated. It has a good index, and an extensive appendix with valuable tables. It can be recommended without reservations to any physician who feels that his background in physics needs amplification or revivification.

The
JOURNAL LANCET

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MINNEAPOLIS, MINN., MAY 15, 1935

FUNDAMENTALS UNCHANGED IN MEDICINE

In 1886 Robert T. Morris wrote HOW WE TREAT WOUNDS TODAY. It was a small book, bound in red as we recall it, full of practical directions in the use of carbolic acid, bichloride of mercury and iodoform. It was soon outmoded of course, but at that time it created a sensation because of its timeliness, its clarity and lack of superfluous verbiage.

That was in the early years of his career, and those who have profited by his teachings in subsequent decades at Bellevue and the New York Post Graduate will be pleased to know that he has now after retirement written a book about the changes that have since taken place. We recall him as he used to stand erect in the amphitheatre, studiously, serenely and silently observing the patient before arriving at a decision. Now the tip of the tongue would appear once or twice to moisten his lips and then came his pronouncement and conclusive action.

In his FIFTY YEARS A SURGEON, he says about the present fear of socialization of medicine that "The individualistic general practitioner and the individualistic specialist will continue to be needed because their respective fields remain unchanged for reasons that are as fundamental as are stresses which enter into the computations made by the engineer. The tensile strength of a breaking heart is not changed by a whole state board of health acting officially. The detail belongs to the general practitioner and there's plenty of such detail."

Fundamentals have not changed and Robert T. Morris has not changed; his reasoning is as clear and sound as ever.

A. E. H.

THE VALUE OF AUTOPSIES

No one will deny that autopsies are of value to the education of the physician. Do not our national medical and surgical organizations urge the members of the medical profession to obtain autopsies whenever possible?

In many cases the failure to obtain post-mortem examinations lies with the physician himself. Somewhat chagrined and disappointed in having a patient die while under his treatment, the doctor often feels that he might be blamed and that he is through with the case after the demise of the patient. He, therefore, hesitates to ask the sorrowing relatives and friends for permission.

With tact, however, one can often obtain a permit by explaining the value of autopsy findings to his family; that it might benefit the doctor in taking care of a similar case occurring in his family.

It is surprising how quickly and unexpectantly

some relatives give permission and even are eager to know the pathological condition underlying the disease.

What an aid autopsy findings are in clearing up some puzzling and obscure condition, some error in technique in surgical operations, some surprizing findings that physical signs did not reveal.

In those institutions where autopsies form a large part of the work, we will find men best equipped with a mental vision of pathological conditions and with a clearer interpretation of the physical signs.

The more often a doctor performs autopsies, the better diagnostician he will be.

A. K.

EATING AND REDUCING

When the blessed women call at the office to discuss their problems of superfluous poundage, it is a safe guess that they have been shopping; and found the exact dresses they would wear, but alas, on *petite* models that were *chic* because slender.

Almost invariably they will tell you, and usually in the order named; that they are small eaters, that they eat no breakfast, and very little for lunch. The wise physician refrains from making any embarrassing inquiry about the evening meal: It is not necessary—he knows. Why not take the cue and carry on accordingly?

A scientifically computed, calorically restricted and properly diversified diet is not what they want. It may be sensible and altogether right but lacks appeal because it is too intricate in the first place and an infernal nuisance when it comes to practical application. They want a trick diet and you can't much blame them. Who wants to carry an analytical laboratory and a diabolically tell-tale steelyard with him wherever he goes?

They have indicated a willingness to go without meals, half of them to be exact. Now everybody knows that it isn't the meal and a half they go without at breakfast and lunch that maintains the curves, it's the meal and half that they take on at lunch and dinner. *Ergo* what? Well, suppose we give a little thought to the needs of the body from the standpoint of time of day and working hours. The rural mother brings her children up to work, and she tells them that they cannot work unless they eat so they are given a big breakfast and a hearty dinner at noon, but are not infrequently put to bed at the end of a toilsome day on a little mush and milk—when work is done.

The aforementioned supplicants can be reduced more satisfactorily and far more safely on two rather than one and a half meals a day if the time element is properly considered. Let them eat a full "English" breakfast and a well diversified meal at noon and go entirely without the evening banquet and let us see what happens. In the first place, they will not eat so much at either of these as they were accustomed to partake of at night. Neither will such meals offer the same tempting variety of rich foods. And finally, there is not the ravishing hunger at night that was formerly fostered by an almost complete abstinence during the day. It is, therefore, not so difficult to forego the evening meal as one might think, and after all the engine doesn't require much fuel as it idles into the night. A little pop corn and a nice red apple robs the pennance of its sting.

We believe the reduction will be slow but sure and when the desired effect has been obtained, they may go back to an evening meal; low tea, high tea or supper, according to their preference for names but "thumbs down" for all times on that nightly soup-to-nuts feast that has been so unnecessary, so embarrassing to a tired stomach and so destructive to ready sales at the *modiste* around the corner.

A. E. H.

SOCIETIES

ORGANIZATION MEETING
for
REGISTERED TECHNICIANS OF SOUTH DAKOTA
Huron, S. D.

Monday and Tuesday, May 20 and 21, 1935

8:30 to 9 A. M. Registration.
Invocation.
Address of Welcome—Dr. W. H. Griffith, Huron, S. D.
Election of temporary president and secretary.
Report of Committee on Constitution.
Discussion of Constitution.
Election of Officers.
Report of the National Society—Miss Helen Olson, L.T. Huron Clinic.

Noon

1:30 P. M.
The Schilling Hemogram—Dr. W. H. Griffith.

The Foline Capillary Blood Sugar Method Applied to the Glucose Tolerance Determination—Dr. Edwin H. Shaw, Associate Professor of Biochemistry, University of South Dakota.

Round Table Discussion, conducted by Dr. Shaw.

Rapid Agglutination Method for Undulent Fever, Mr. Harry Faulkner, L.T. City Health Department, Sioux Falls, S. D.

Banquet at six o'clock.

General Speaker—Dr. J. C. Ohlmacher, Dean of Medicine, Professor of Pathology and Bacteriology, University of S. D.

Adjournment.

Tuesday

9 A. M.

Friedman's Laboratory Test for Early Pregnancy, Arthur R. Lundquist. L.T. Peabody Hospital, Webster, S. D.

The Kahn Test, a comparison as to its relation to the Wassermann test as shows over a period of years in the State Health Laboratory. Bernice M. Iverson, L. T. State Health Laboratory, Vermillion.

Blood Sedimentation—Sister M. Leonard, L.T. McKennan Hospital, Sioux Falls, S. D.

Time Saving Methods in the Laboratory—Mr. Samuel Crabb, L.T. Black Hills Methodist Hospital, Rapid City, S. D.

Modification of Distillation Method of Blood Urea Determination, Miss Helen Olson, L.T. Huron Clinic.

PROCEEDINGS
MINNESOTA ACADEMY OF MEDICINE
Meeting of March 13, 1935

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 13, 1935. The president, Dr. A. R. Hall, in the chair.

The meeting was called to order at 8 p. m. There were 46 members and two guests present.

Minutes of the February meeting were read and approved.

Upon ballot, Dr. Thomas S. Roberts, of Minneapolis, was elected vice-president of the Academy for 1935, in place of Dr. Butler, who had resigned.

The scientific program followed.

The Congenital Clefts of the Face and Jaws

HARRY P. RITCHIE, M.D.
ST. PAUL

Dr. Ritchie's paper was illustrated with numerous lantern slides of cases, showing conditions both before and after operative procedures.

Discussion

DR. CARL W. WALDRON (Minneapolis, by invitation): I certainly appreciate the opportunity to be here tonight to hear Dr. Ritchie. I have had the pleasure of working with him for several years and more and more I am convinced that we are proceeding along fundamental lines. This is well illustrated by his method of approach of the subject of lip and palate repair. I feel that the surgical problems of the repair of these congenital defects are being thought out better by the surgeons of the country and that we are going to make much more progress in the next thirty or forty years than we have in the past. I think this progress will be based on the fundamental viewpoint that Dr. Ritchie has given us tonight. We see cases of frightful adult deformities due to lack of appreciation of the embryological and physiological considerations which Dr. Ritchie has just presented. Up to ten or fifteen years ago the problem was either approached from a cosmetic standpoint or too much attention was given to the bony foundation insofar as the maxilla was concerned. Many of the patients were operated upon with the best of intentions, the operation, however, being performed at much too early an age. We have still to contend with the old ideas of some surgeons that speech is well developed during the first year of life. These surgeons consequently thought that the soft palate must be sutured before nine months of age. This resulted, of course, in the sutures pulling away on account of undue tension, with a resulting gross deformity that could not be repaired surgically at a later date.

The muscle theory of the lip repair, as stressed by Dr. Ritchie for many years, is, I am sure, fundamental to the proper functioning of the lip. There have been certain problems with respect to the reconstruction of the floor of the nose that have made surgeons think out certain procedures. These primarily were of a purely plastic type, but we found that to make the part look right we should bring the muscles together correctly from the anatomic standpoint.

For several years I have used the modified Mirault procedure, though not quite as Dr. Blair has advocated. He elevates and turns skin flaps that include muscle. By undercutting, these skin flaps can be turned and still leave the large muscle bundle on either side for direct approximation and suture. In this procedure a small inverted V-shaped portion of skin from the short side of the lip is sewn down below the anterior margin but fundamentally it makes such a lip as Dr. Ritchie has described. I am convinced that with the thought and care we are now giving these cases, the surgical catastrophes we now see in adult cases will not be seen ten or fifteen years hence.

However, we still have plenty of problems. The matter of efficient dental occlusion and the satisfactory development of the facial profile are examples. After we try to get these taken care of, we still have the bugbear of imperfect speech to consider. I think the surgical lengthening of the palate and the improved functional closing of the nasopharynx is something that holds out a lot of promise. I agree with Dr. Ritchie, it is not a primary procedure.

It is a pleasure to have heard Dr. Ritchie tonight.

A Contribution to Our Understanding of the Mechanism of Hypertensive Encephalopathy and Their Treatment in a Certain Group of These Cases

GEORGE FAHR, M.D.
MINNEAPOLIS

Discussion

DR. J. F. CORBETT (Minneapolis): I would like to thank Dr. Fahr for his most excellent paper and his treatment of the whole subject. This brings to mind two cases of mine where subtemporal decompressions were done. One of these was a man about 40 years old. There was no very marked degree of hypertension and, aside from that, the symptoms and signs were the same as those described by Dr. Fahr. My diagnosis, I must confess, was wrong. We thought we were dealing with brain tumor. I did a decompression. When I opened the dura and saw this flood of fluid coming, I discontinued any further operative procedure and awaited the result of the decompression. In a short time the other symptoms disappeared and the individual recovered to practically normal health. In this case there was even partial paralysis of one of the limbs. I watched that man for a long period of time. He remained in health, to my knowledge, for ten years. A short time ago I happened to see him in Northwestern Hospital where he is being treated for some kidney condition.

The other patient was a much younger individual who I also thought had brain tumor, but, in making the drill hole, I accidentally nicked the dura and had a flood of cerebrospinal fluid. That was four years ago. I saw that patient in the office the other day and there is no return of symptoms. That case did not have high blood pressure either.

This thing has been defined by Cushing as serous meningitis, and I placed these two cases under that heading. In two cases I have seen instances of "wet brain." One alcoholic had a wet brain with enormous amount of fluid. He got well but I lost track of him. The other case was a boy who sustained a severe fracture of the femur and was given ether for a long time. Soon after that he became paralyzed on one side. I was sure of the diagnosis of subdural hemorrhage. I went in but could not find anything outside of the dura. In that case I found an enormous amount of cerebrospinal fluid. Those four cases are cases of serous meningitis. Two remained practically well; one I don't know anything about, and the other died soon after the decompression.

DR. GEO. N. RUHBERG (St Paul): The studies of Fremont Smith and others have definitely shown that the spinal fluid is a transudate from the capillaries of the choroid plexus. The rate of formation is in direct relation to the venous pressure, which probably explains why, in some cases of hypertension, no increase in spinal fluid takes place, and in others it does. Any factor tending to increase venous pressure will, therefore, bring this about. I would ask if Dr. Fahr, in his study of these cases, did not find this to be true?

DR. JOHN BROWN (St. Paul): I would like to ask Dr. Fahr for his differentiation between this and brain tumor.

DR. MOSES BARRON (Minneapolis): One does not know what is going to be left for the internist, with the surgeons coming in and finding that they can operate now for heart disease, for hypertension, and similar conditions. Hypertensive encephalopathy is a very interesting condition. Unfortunately it is very complicated and its mechanism is little understood. Dr. Fahr stated that the operation on the first case was better than the second one, but he did not state why it was better. Thus encephalopathy occurs both with essential hypertension and in acute and chronic glomerulonephritis. In nephritis one, of course, always has to consider the possibility of a true uremia. The use of operation for this condition will prove very limited in scope, since I believe that the symptoms are not always produced by an increase in the amount of the spinal fluid. Many cases come to autopsy in which there is no increase in the amount of spinal fluid, though there is an increase in the brain pressure, and thus, also, in the spinal fluid pressure. The second case reported gave only 7 c.c. of fluid, which illustrates this point.

The mechanism may be visualized somewhat like this: At first there is an increase in blood pressure, this causes an increase in pressure in the cerebral vessels. There is a poor vasomotor control there. The increased flow of blood in the capillaries under an increased pressure causes an escape of fluid into the brain tissues. It probably results in an intracellular as well as an intercellular edema. At autopsy the brain often appears under great pressure but the surface is dry. The symptoms therefore are the result of the ischemia resulting from the increased pressure.

I recall a case in point of a man who developed convulsions. I found him in bed with complete paralysis of his left arm and hand. As I started to get the sphygmomanometer and to place the cuff around his arm, he suddenly began to move his arm normally and the paralysis just as suddenly disappeared. While talking with him the paralysis again developed and, after a while, just as promptly disappeared. Through rest in bed and other measures the patient was comfortable for a month and then one morning he developed a true hemiplegia.

The ischemia in the brain, resulting from spasms in the blood vessels, plus the increased cerebral pressure may cause a weakening of the distal part of certain blood vessels so that when the blood starts flowing again the vessels, having become weakened, may rupture and the cerebral hemorrhage obtain.

It is my opinion, therefore, that only a few cases of this type can be subjected to this type of operation—those with an increased cerebral spinal fluid. My surgical friends, therefore, should not become oversanguine about the operation on this type of case.

DR. FAHR (in closing): It is very nice to get discussions from the surgeons because they are so very clear on certain things and stick to the point at issue. Dr. Corbett has given me considerable enlightenment on this problem. I liked to hear Dr. Corbett's description of

this flood of subarchnoid fluid coming out—this "wet brain." You can't get some of the pathologists to call it a "wet brain," but this is a good way to get around the pathologist.

It was not an intensely high blood pressure that Dr. Corbett measured in the young girl who probably had an acute nephritis. The interesting thing about it is that they will go along for some time with a moderately high blood pressure and then up will go the blood pressure to higher values; they get blind, or vomiting begins, or convulsions start. Then if something like magnesium sulphate is given, that will bring the blood pressure down, these symptoms will disappear. I am not at all surprised that there was not a very high blood pressure at the time Dr. Corbett took it, but there probably was at the time the convulsions were present. In our cases when we got the blood pressure down, the symptoms disappeared. When the blood pressure went up, the symptoms returned. I venture that, at the time of the convulsions, you would have found the blood pressure around 200.

In reply to Dr. Ruhberg, quoting the man in Boston as saying that the "cerebrospinal pressure is proportionate to the venous pressure," I would state that if you raise the venous pressure you always raise the capillary pressure and the capillary pressure probably determines the rate of ultrafiltration and formation of cerebrospinal fluid. If vasomotor control of the lumen of the small arteries is lost, capillary pressure must rise in high blood pressure.

Dr. Brown wanted to know how we differentiate this from brain tumors. Well, that is a difficult thing. Bramwell fell down on the diagnosis in his case. They thought it was a brain abscess and it was what they called uremia. The only criterion I know of is the retinal arteriolosclerosis found in cases of primary hypertension, or a knowledge of a previous history of high blood pressure, or urine and kidney function studies. The urine examination may help; kidney function studies may also help in the differential diagnosis.

In regard to Dr. Barron's discussion, I did not say that all cases of hypertensive encephalopathy are due to increased brain pressure. I said in a special group of cases, which I thought I carefully defined, this was probably the mechanism. The meeting adjourned.

R. T. LaVake, M.D., Secretary.

PROCEEDINGS
of the
MINNEAPOLIS CLINICAL CLUB
REGULAR MEETING, MARCH 14, 1935
President Erling Hansen in the Chair

The Diagnosis and Treatment of Vasomotor Rhinitis, With Especial Reference to Allergy*†

Elmer M. Rusten, M.D.
MINNEAPOLIS

The term vasomotor rhinitis refers to a particular group of symptoms and nasal pathology which has been recognized for many years as idiopathic, chronic, catarrhal, hyperesthetic rhinitis, and many others. It is only recently that some of these nasal disorders have been proven and acknowledged as caused by hypersensitivity. Since this recognition, less emphasis has been placed on previously used nomenclature. In this paper only the group which respond to allergic treatment shall be considered, exclusive of seasonal vasomotor rhinitis or hay fever.

The diagnosis of allergic rhinitis is dependent upon the proper evaluation of history, physical examination and laboratory findings. The onset of symptoms may occur at any time, the age group between 20 and 40 years being the most common. The incidence is higher in Jews than in Gentiles. It may follow severe systemic disease, acute exanthems, acute infectious coryza, or may appear without any known precipitating cause. Characteristic are the acute attacks of sneezing followed by unilateral or bilateral nasal blockage and watery rhinorrhea. These attacks appear most frequently on arising in the morning and on retiring, and may last a short period of time or persist for weeks or months. If persistent over a long period, symptoms, although present to a minor degree, have acute exacerbations. Any one of the three previously mentioned symptoms may predominate at various times. As the disorder become chronic, sneezing becomes less and obstruction and watery discharges increase. If the causative agent is constantly present, edema of the nasal mucosa may become so extensive that anosmia or hypo-osmia may result. The voice develops a nasal tone. This varies directly with the amount of swelling and occlusion present. Itching and lacrimation of the eyes may also occur. The degree and presence of this complaint is, in the main, dependent upon whether the excitant is inhalant or ingestant in origin. Usually inhalant factors have more eye symptoms. When this disease occurs in infancy, nose rubbing, mouth breathing, and watery discharge are the most common findings. The persistence of symptoms is dependent upon cause. However, there are seasonal variations. House-dust sensitive individuals have more difficulty in the winter months, while other patients whose complaints are due to flowering house plants, perfumes or seasonal foods, have recurrences only after these specific contacts.

Secondary factors often make the history misleading. Probably the most important of these are cold, heat, exhaustion, excitement and humidity. These fore-mentioned may cause exacerbation of symptoms when the nasal mucosa

*Inaugural Thesis read before the Minneapolis Clinical Club at its meeting of March 14, 1935.
†Vasomotor rhinitis and allergic rhinitis are used synonymously in this paper.

is in an altered state. The majority of these patients fail to be affected by these same conditions when the primary etiologic cause is removed. In the minority of cases there may be a primary physical allergy present. This, however, is not common.

Head pains occur when obstruction is severe. The most common of these which are uncomplicated by infection or polypi, is the contact or congestive headache generally present on the side of the nasal obstruction. When this is removed the headache is relieved. Occasionally pain over the malar eminences occurs with a similar history of onset and relief. Symptoms referable to edema of the Eustachian tube are also present in a few individuals. Sinusitis is not an uncommon finding in nasal allergy and may antedate or follow the allergic nasal disease. It appears that unnecessary instrumentation of the nose may predispose to paranasal sinus infection, if not already present. Headaches with this complication are so well known that no further reference shall be made to them.

Sequelae of vasomotor rhinitis, not necessarily complications, are laryngitis, tracheitis, asthmatic bronchitis and bronchial asthma. This, in all probability, is due to a change in shock organ in the majority of cases, as, when these complications occur, the nasal allergy becomes less marked; so much so that the patients may not complain of them at all. Approximately 50 per cent to 70 per cent of all bronchial asthmas have or have had symptoms of vasomotor rhinitis or seasonal hay fever.

Past history of other allergic disease is important as vasomotor rhinitis may occur with or following eczema, bronchial asthma, familial sick headaches, uticaria and seasonal hay fever. The presence of any one of these in the anamnesis is not sufficient in itself to make a diagnosis that the presenting symptoms are due to hypersensitivity, but serve as valuable corroborative evidence that the individual is allergic.

Family history of atopic disease is additional evidence in favor of allergy, as the incidence of hypersensitivity in the offspring of an atopic family is 40 per cent to 80 per cent, dependent upon whether it is present in one or both parents.

Physical Findings—When vasomotor rhinitis has been present throughout infancy the contour of the face is changed and has an adenoid appearance, with diminution of the malar eminences, over-riding of the upper central incisor teeth, lumpy nose, and high-arched palate. The nasal mucosa during an attack is smooth, uniformly edematous and globular and may occlude the nasal passages. The color varies from gray-pink to pale cyanotic blue. The appearance is clean and moist. These findings may be in one or both sides of the nose. Polyi may be present, the glistening appearance of which is characteristic Hansel[1] and Hirsch[2] believe these are all primarily allergic in etiology. Symptoms must be present at the time of examination as in the early stages of the disease the nose may appear normal between attacks. However, patients generally consult their physicians when the complaints are of such severity as to be constantly present.

Laboratory Findings—One of the recent advances in the diagnosis of allergic rhinitis is the presence of eosinophiles in the nasal smears or in the nasal discharge.[3] This cytologic finding is not constant, and oftentimes repeated examinations are necessary to obtain positive results. The finding, if present, is strong evidence in favor of an allergic reaction. It does not give absolute information as these cells may occur in acute infectious coryza. Blood sedimentation time, as shown by Schulhof,[4] Wescott and Spain,[5] and others, is slower than normal in uncomplicated allergic conditions. It is the opinion of the latter authors that it is difficult to determine whether patients have infection, as foci may be present which are not demonstrable by physical examination or laboratory means. If infection is present, it may have no effect upon existing allergic conditions. Blood eosinophilia may or may not be found at the time of examination. Probably a more constant finding is a relative lymphocytosis. The changes in density of the x-ray film of the paranasal sinuses should be considered from the viewpoint of exudate present and thickened edematous mucosa, either of which may give a picture which cannot always be differentiated from the other.

Skin Tests—Skin tests, although not as accurate as some authors indicate, are of great value in specific etiologic diagnosis. Generally speaking, skin tests (scratch and intradermal) are 50 per cent accurate. More specifically, they are about 75 per cent accurate in inhallant atopens, and about 35 per cent accurate in the ingestant group. The panacea of skin testing should be viewed critically, as much is yet to be learned regarding them and the results from tests vary with the experience in their application and interpretation. The greatest error in allergic management of vasomotor rhinitis is improper evaluation of these tests.

Recently Vaughan[6] has suggested the use of the leucopenic index as not only a check on positive skin reactions but also on false nega-

tives. He has found the leucocytic response to confirm the skin reaction in 62 per cent and has increased laboratory diagnostic efficiency 5.2 per cent.

The combination of all the previously mentioned methods of testing, in view of their accuracy, should be considered laboratory aids in diagnosis only and starting points of treatment.

The interpretation of skin tests as cited by Rinkel[7] is as follows:

1. They do not indicate whether the patient is allergic.
2. They may vary in intensity in various areas of the body and at different times in the same area.
3. The specificity of reaction cannot be determined by this method.
4. It is not possible to determine the degree of sensitivity by the size of the skin reaction; the relationship is only relative.
5. Reactions must correlate with history to be of significance.
6. Tests do not differentiate between primary and secondary factors.

Treatment—The treatment of allergic rhinitis uncomplicated by infection should result in about 80 per cent of patients receiving 50 per cent to 75 per cent relief of symptoms. If treatment is instituted early in the disease, a few can obtain complete relief. The percentages as quoted are such that patients' compaints are minor and are not incapacitating. There is also a comparable improvement in the appearance of the nasal mucous membrane and disappearance or retardation of polypi formation.

To maintain this relief necessitates complete coöperation of the patient for a considerable period of time. When ingestants are found to be the cause, abstinence is the only practical method of treatment at this time. Desensitization by injections in the treatment of this group, at the present state of our knowledge, is not reliable or specific. The avoidance of ingestants, to be successful, necessitates careful instruction of the patient as to components of various foods if the cause is one which is frequently found in combination with other foods. Uncommon causative inhalants can generally be avoided. Those which are constantly present in the environment, even though in low concentration, should be treated by desensitization. This is accomplished by intradermal or subcutaneous injection of an extract of the specific antigen. The maximum doses of these injections should be given over a period of months to insure the greatest relief. This will protect the patient against the usual air concentration of the offending factor.

The use of the diet and environmental diary, if interpreted properly, will give information which cannot be obtained from the history and testing of the patient, especially if the condition is chronic. These should be kept for a month or six weeks so that a sufficient period of time has elapsed to ascertain if repetition of ingestants, environment, etc., causes symptoms. This procedure is equally as important as the skin tests. Rowe's[8] elimination diets can be used if testing is not possible, but they are difficult to follow and give no information relative to inhalant causes.

Allergic rhinitis complicated by polypi necessitates surgical intervention. However, the less the instrumentation or operation on the hypersensitive nose, the better will be the response to allergic management. Those patients who have had repeated and radical intranasal surgery obtain less than 50 per cent of the benefit received by the non-operated group.

The effect of infection upon the hypersensitive nasal mucous membrane, and allergy upon infection, is not a settled question. The consensus of opinion at this time is to treat both conditions if present, as neither treatment is sufficient unto itself. Elimination of either will not result in maximum benefit. Non-specific therapy by injection of various proteins and metals may result in a palliation of symptoms. However, this should not be resorted to unless other methods directed at specific causes fail.

Summary

(1) Vasomotor rhinitis which is allergic in etiology has a characteristic history and typical nasal findings in the majority of cases when symptoms are present.

(2) Laboratory methods: nasal smear for eosinophiles, blood sedimentation time, blood eosinophilia, diet and environmental diary, skin tests and leucopenic index are aids in diagnosis.

(3) Treatment according to cause:

a. Avoidance of ingestant factors.
b. Desensitization for unavoidable inhalant causes.
c. Treatment of infection and allergy with a minimum of surgery.

(4) Treatment of uncomplicated vasomotor rhinitis should result in 80 per cent of patients receiving from 50 per cent to 75 per cent relief of symptoms.

Discussion

Dr. Moses Barron: There is very little that I can say about this subject. I have always found

it a difficult problem and though I have tried skin tests for a number of years, I have given up most of it because of the very uncertain results.

I was much interested in Dr. Rusten's results where he claims benefit in from 50 to 85 per cent. I wonder if he can identify the worse offenders by the intensity of the reaction. In my experience I have found that the mild reactions, such as plus minus, will often give the worst clinical reactions, while a three plus may not affect the patient at all. I would like to ask Dr. Rusten what substances he has found to be the cause of the severest reactions.

Discussion

Dr. H. B. Sweetser, Jr.: I think this is a very delightful presentation of a difficult subject. It indicates that Dr. Rusten has had not only extensive but discriminating experience in allergy. His discussion of skin tests particularly, I think, is very good. When the process of skin testing first came out and first began to be popularized the impression was that, like every test that was popularized, it could take the place of intelligence, where as the matter of intelligence is first and skin testing afterward.

Dr. Rusten handled the nose and throat men, I thought, quite gently, and if you could go back over your experience and think of the friends and patients you have sent to nose and throat men who have come back and told you that their sinuses were washed out fifty times, their ethmoids cleaned out many times—you really appreciate that Dr. Rusten is a real gentleman.

The whole subject of vasomotor rhinitis is a difficult one and, as Dr. Rusten says, it requires the aid of the internist who is doing allergy as Dr. Rusten must admit he is, and the nose and throat men working together.

Dr. E. S. Platou: I would like to ask whether Dr. Rusten would recommend passive transfer as a method for routine testing in pediatrics up to a certain age or reserve this as a more selective method to be used after scratch testing?

Dr. W. E. Camp: I certainly have enjoyed Dr. Rusten's paper very much. As I heard Dr. Rusten bring up these various subjects several questions occurred to me. The first one refers to the age group of these patients. We see, in our clinical practice, quite a few children who have allergic sinusitis. Then too, there is the question of surgery in these cases. I think most of the nose and throat men agree that as far as a hyperplastic sinusitis is concerned, irrigations do no good at all. If proper surgery as indicated is done I do not see why it should make the results of treatment worse in these cases. Certainly if polypi are removed, particularly if in the sinuses themself and with particular reference to the antrum where we have good access to the sinus and can clean out all the diseased mucus membrane, it seems to me the results of treatment in these cases after surgery should be better.

Another thought which occurred to me was the type of vasomotor rhinitis seen in pregnancy and tumors of the pelvis. There is a relationship between certain types of vasomotor rhinitis in pregnancy and tumors of the pelvis.

Dr. L. R. Boies: I think that most nose and throat men agree that vasomotor rhinitis is a very common condition. Out of one hundred individuals who might come with the complaint of frequent or chronic "head colds" over fifty per cent will be found to have a vasomotor rhinitis. The fact that surgery has little place in the treatment of this condition is well recognized. The well intentioned attempts to relieve this condition in the past by surgical therapy is responsible, perhaps in a large measure, for the disrepute with which much of our nasal surgery is regarded. However, for the removal of degenerated tissue when this exists beyond the hope of repair, or to drain an actual collection of purulent fluid, there is no contraindication to surgical measures.

Dr. C. J. Ehrenberg: May I enlarge on Dr. Camp's discussion relative to the rhinitis that we observe in pregnancy and with pelvic tumors? This condition is rather common, particularly in pregnancy. I would like to ask Dr. Rusten what he considers is the mechanism of this? Dr. Hofbauer, in advocating the use of nasal pituitrin in labor, suggests the possibility of an additional cranial nerve with a sympathetic connection to the pelvic sympathetic system. Also, if pelvic conditions can cause rhinitis, may not the converse be true—that a rhinitis may cause pelvic symptoms?

In patients with cervicitis and leukorrhea careful questioning often reveals that the leukorrhea commences or is increased after an attack of upper respiratory disease. Would this be due to nervous sympathetic reaction or is it a constitutional condition?

Also, it has been suggested that allergy may be the cause of dysmenorrhea. There have been a few reports suggesting this relationship. I would like to ask Dr. Rusten if he has had any experience along this line?

Dr. Walter Fink: I should like to mention a phase of this condition which I have noticed in children who have come in because of eye trouble. Parents come with the impression that glasses were needed because the child would have symp-

toms suggesting eye fatigue and irritation. Examination would reveal a moderate degree of error which was not enough to justify glasses, but most important, a very irritating conjunctiva. We have found there is a very definite vasomotor rhinitis associated with these cases. I would like to ask Dr. Rusten if he notices very many eye symptoms associated with his cases.

Dr. Rusten, in closing: Passive transfer consists of taking blood serum from a sensitive individual and injecting this intradermally into a nonsensitive patient. These sensitized sites are tested in three to five days by intracutaneous injection of solutions of foods, etc.; the resulting reaction, if positive, is similar to other direct testing, i.e., wheal and erythema. This type of reaction is supposed to appear only in atopic individulals. Passive transfer is practical in infants, where scratch and intradermal tests are inaccurate, in pyodermas of the skin, dermographism, and in patients where demonstration of a blood circulating reagin is necessary.

The most frequent causes of vasomotor rhinitis may be divided into two groups: (1) ingestants, in which wheat, milk, orange, nuts, cottonseed, chocolate, tomatoes and coffee are the most common; (2) inhalants, such as orris root, dust, animal and bird emanations. However, the etiologic factor may be any substance which the patient contacts through ingestion or inhalation.

Skin reactions, when positive, should not be given etiologic significance until proven. This is especially true in ingestant reactions. The size of reaction is only relative as compared to the individual clinical sensitivity.

Vasomotor rhinitis may occur at any age. However, the age group as previously cited is generally the most common. The appearance early in life may be dependent upon whether or not the allergic disturbance is found in both parents.

The use of calcium, by mouth or intravenously, at the present time is generally given empirically. In a few instances it appears to have definite benefit. More often there is no relief of symptoms that can be attributed directly to the calcium alone.

Glands of internal secretion probably play a role in allergic disease. This, however, has not been adequately explained in most instances; at least, if the explanation has been made, it is of no practical therapeutic value in disorders that occur in pregnancy, during menstruation, and gland dysfunctions.

The symptoms referable to the eye occur most commonly in patients with vasomotor rhinitis due to inhalants. They may, however, occur alone; and, in these, a smear for eosinophiles might be an aid in diagnosis.

A complication which is infrequently mentioned is that of eczematous eruption due to inhalant causes. This may involve any part of the body, the face and arms being most common. The exacerbation of these skin lesions correlates with the increase in symptoms of vasomotor rhinitis. This dermatological condition is recalcitrant to local treatment, but responds well if the cause can be removed. Desensitization by intradermal and subcutaneous injection is worthy of trial in unavoidable factors.

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J. K. Anderson,
Secretary.

Mixed Tumor of the Sub-Maxillary Salivary Gland
Case Report and Discussion

Willard D. White, M.D., F.A.C.S.

On January 28, 1935, I first saw a 35-year-old, white, married woman who came in because of a swelling on the right side of her face just below the angle of the jaw. This swelling had been present for about two years. It had increased in size very slowly but otherwise it gave practically no symptoms. Her history was otherwise negative as far as this complaint was concerned excepting that she had lost about 35 pounds in weight during the past year. She attributed this to the fact that she had been worrying a great deal. Her temperature and pulse were normal. She had just been examined by a good internist who had made a careful general physical examination, and had her chest X-rayed and had blood examination, a Mantoux test, and also he had attempted to aspirate this lump by inserting a needle into it. No material was obtained by this attempt. He advised removal of this mass. On examination the lump in question appeared to be situated in the region of the right submaxillary gland, and felt about 1½ by 2 inches in size. The skin was freely movable over it and the mass could be moved slightly underneath the skin. It was not tender. There was no redness or feeling of heat. X-ray examination was made and no evidence of calculus was found. A provisional diagnosis of mixed tumor of the submaxillary salivary gland was made and removal of the mass was advised.

On January 31, 1935, under general anesthesia, an incision was made over the mass and it was found to be intimately connected with the submaxillary salivary gland. It was incapsulated and shelled out easily. Dr. William O'Brien, the pathologist, was present when this was removed and examined it grossly and also made a frozen section at once. He stated there appeared to be considerable cellular activity and, therefore, 50 milligrams of radium was placed in the wound at the site of removal of the mass and the subcutaneous tissues and skin closed over it. This radium was removed at the end of twelve hours. The skin healed up promptly and the recovery was entirely uneventful.

Later paraffin sections were made and examined carefully. The following is the report of Dr. O'Brien. Gross description: Specimen is tumor from cervical region. It measures approximately 3 to 4 cm. in diameter. While it is encapsulated, one has the impression that the outer membrane is not intact at all points. On section, it shows a white, meaty, slimy surface. There are no hemorrhagic areas present. There are a few discolored yellowish-brown points but degeneration is not a marked feature.

Microscopic—Most of the tumor consists of loose myxomatous tissue. There are small, round and elongated, hyperchromatic nuclei rather widely separated from each other by light blue staining myxomatous structure. In addition, there are islands, cords and masses of epithelium scattered throughout the myxomatous structure. This epithelium, in places, is strongly suggestive of glands, while in other places, no definite formation is observed. There is a loose fibrous stroma in the background and a few blood vessels. While the general appearance is that of a benign tumor (mixed), there is no absolute way of distinguishing between benign and malignant growths in the microscopic study. The tumor may recur because nests may have been left behind. There is also the possibility of new tumor formation.

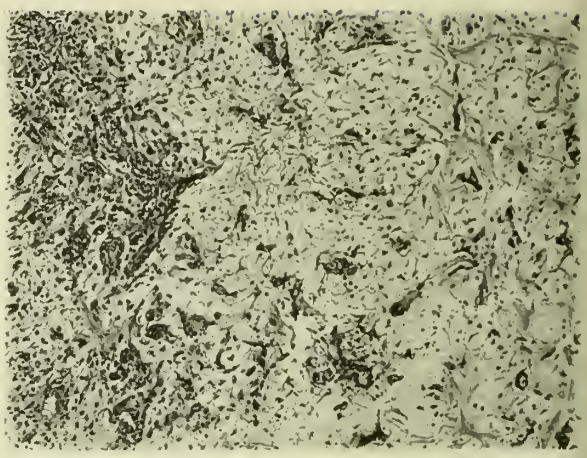
Diagnosis: Mixed tumor of salivary gland.

Discussion—When a swelling in this region develops the following condition might need to be considered in a differential diagnosis.

1. Acute inflammations which usually occur as complications of acute infectious processes such as bronchopneumonia, peritonitis, pyelonephritis, and sometimes complications of operations. These are seen more often in the parotid than in the other salivary glands. Under this heading also would come epidemic parotitis or mumps.

2. Chronic inflammation due to obstruction of the submaxillary gland. The submaxillary gland is more frequently involved than the parotid. This may occur as a result of a clump of instissated mucous or by a swelling of the mucosa or by a calculus.

3. Chronic granulomatous infection such as tuberculosis, syphilis and actinomycosis by extension. These conditions are rather rare in the salivary gland.



4. The benign tumors other than epithelial tumors such as lipoma, hemangioma, lymphangioma.

5. Epithelial tumors:
   (a) Benign adenoma.
   (b) Malignant adenocarcinoma.
   (c) Autochthonous mixed tumors.

According to a number of authors on this subject and included in these is Blair in Lewis's Practice of Surgery, about 90 per cent of the mixed tumors occur in the parotid, a little less than 10 per cent in the submaxillary gland and occasionally in the sublingual gland, in the gums, hard and soft palate, tonsils, etc. That is, they may develop in any of the structures which have their origin in the mandibular arches of embryo. These are nearly always unilateral but they may occur in one parotid and one submaxillary gland on the same side or on opposite sides. These are rare indeed. Ewing states that adenoma of the salivary glands are rare in any of the glands. Transitions to malignant adenocarcinoma are observed. I shall quote rather freely from Ewing's[1] book and give his classifications in a general way.

Carcinoma

"Pure malignant tumors of the salivary glands are by no means rare. These are mostly of the basal cell type." The carcinomas usually develop rapidly. They may be encapsulated at first, they soon invade the whole gland, the capsule and the regional nodes. The more adenomatous tumors may contain cysts while the more malignant growths are solid, firm, opaque and in many instances lobulated. After extirpation prompt recurrence is usually observed, even when the structure suggests an adenomatous nature. In the advanced stages there are local and general metastases and in many instances the bones are involved. Therefore, the clinical malignancy is pronounced. In some instances there is a history of a quiscent growth of long standing which eventually becomes active, indicating a change from a benign to a malignant structure. Ewing states that he has observed a carcinoma developing on a granuloma of three years' duration in the submaxillary gland.

"Structurally there are two main varieties, adenocarcinoma and alveolar carcinoma. To these must probably

be added a third group of diffusely growing tumors of spindle or round cells which are atypical carcinoma." The adenocarcinomas are alveolar or papillary. The former develop from the acini and the latter from the ducts.

Mixed Tumors of the Salivary Glands, Etc.

"In the salivary gland, buccal mucosa, palate, lips, neck, orbit, lacrimal gland, and face occur a group of tumors about the origin of which has long been maintained an active controversy." They are of complex structure usually presenting epithelial elements and mesoplastic tissues, chiefly cartilage, mucous tissue and cellular connective tissue. Any of these elements may predominate, giving merely pure chrondromas, sarcomas, or carcinomas, but usually all the cell types are represented." "These tumors were originally regarded as carcinomas and while Virchow derived the cartilage from the connective tissue by metaplasia, Cohnatim regarded it as a derivative of remnants of the branchial arches." Many pathologists, including C. Kauffman, Wartmann, Volkmann, Collet and Pitance have advanced different theories as to the origin of these tumors. "In 1908 Krompecher concluded that the mixed elements of the tumors were all derived from an epithelial origin to metaplasia."[2] This point is still unsettled.

Clinico-pathological Features[2]

Age—These tumors may occur at any age. They have been found in infants of seven months and occur in greater frequency between 20 and 60 years of age. The sexes are about equally involved. In about 50 per cent of cases in various series are seen within five years. The remainder of tumors up to 30 or 40 years. Several others have noted those tumors which appear to be malignant come to the physician soonest. In one series the average duration in the benign group was seven years and in the malignant cases 4½ years.

Region Involved—About 90 per cent of the tumors occur in the parotid and a little less than 10 per cent in the submaxillary gland and less than one per cent in other parts of the mouth.

Treatment—"Three methods of caring for these tumors have been suggested: Excision, radiation alone or in combination with surgery and no treatment."[3]

Recurrences	*Cases*	*Percentage*
Mixed tumors	40	30
Carcinoma	30	100
Sarcoma	6	65
	76	60

The time of recurrences is variable. They may recur in one year or as long as 20 years afterward.

Radiation Therapy—"The ideal treatment is combined surgery and irradiation. When the tumor is not favorably located for surgery irradiation alone is best. Postoperative recurrences are best treated by irradiation. These conclusions were generally agreed to in the discussions of the paper and the other articles abstracted contained about the same ideas. Neil concurs in the opinion although he states that tumors are highly ray resistant."[4]

This case is reported at this meeting merely as a matter of interest and to direct our attention to this subject again.

Discussion

Dr. J. S. McCartney: Did you say anything about squamous carcinoma?

Dr. W. D. White: No, I did not. In this classification it would be included in the adenomata and carcinomata or adenocarcinoma.

Dr. J. S. McCartney: I have had the impression, whether it is true or not, that most of the truly malignant epithelial tumors that occur in the submaxillary glands are squamous cell carcinoma. I do not know whether it is true because they are not so very common. There is some evidence that these tumors may be of the histoligic type of squamous carcinoma, though they are not true squamous and do not act as such.

There is an instance in the parotid gland—a very prominent man here in town had a definite swelling with fixation and discoloration of the skin over the parotid. That tumor was explored, found to be very dense and close to the skin surface. No visible line of cleavage was found so that it could not be enucleated and all that was done was removal of a small specimen for biopsy which microscopically was quite definitely squamous cell carcinoma. This man was treated by X-ray and the tumor entirely melted away so that today he has not a vestige of tumor in the parotid gland so far as anyone can tell. There is no evidence of recurrence.

I think it is McFarland, of Philadelphia, who states that although these are microscopically squamous carcinoma they do not act as such.

I do not quite see how one could say that the mixed appearance you see in the salivary glands could be derived entirely from epithelium because you see mixed types of connective tissue and not infrequently cartilage. How you can get myxomatous tissue, connective tissue and cartilage from epithelium, I don't know. I know how you can get squamous epithelium from glandular epithelium and vice versa, but I do not see how you could get cartilage from squamous epithelium.

There is one other tumor we might add to this list, that is melanoma. Recently we had a tumor that was entirely in the submaxillary region if not in the submaxillary gland. Clinically it was supposed to be a submaxillary gland tumor. Microscopically it was a lymph node, containing polymorphous cells, small cells, large cells, and all sizes. I do not know whether or not it was primary in this location. One might think it was a metastasis, but clinically it was a submaxillary tumor.

Dr. Lawrence R. Boies: We see mixed tumors occasionally in the soft palate and in the pharynx. If there is any tendency in this particular case to recurrence, I think that it will probably be at the site where there was a break in the capsule at which place possibly a nest of tumor tissue was left.

Dr. W. D. White: I appreciate the discussion. It is a fact that squamous epithelial tumors do arise within the gland and they are supposed to be accounted for on the basis of inclusion of nests of these cells. I under-

stand that these are different from the ones that actually arise from the growth from the epithelial cells in the acini of the salivary glands themselves. Some authors have discussed these inclusion tumors in addition to those which actually arose in the glands themselves.

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4. ib., p. 225.

NEWS ITEMS

Dr. J. J. Seibel and family, Harvey, N. D., have returned from a four months' trip in California.

Dr. Ernest B. Bradley, of Lexington, Ky., was made president-elect of the American College of Physicians.

Dr. M. W. Lyons, formerly of Sentinel Butte, has moved to Beach, N. D., and will continue general practice.

Dr. Kenneth Malvey, formerly in practice at Sterling, Mich., has become a member of the staff of the clinic at Moorhead, Minn.

An addition to the Veterans Hospital at St. Cloud, Minn., will be started at once that will cost $300,000, and give them 160 more beds.

Dr. George Johnstone, formerly in practice in California, has recently located at Beach, N. D., and opened offices for general practice.

Dr. H. L. Reichert, Belfield, N. D., is now located at Watertown, S. D., where he has opened office, and will continue general practice.

Dr. Jesse LeRoy McElroy, former superintendent of Ancker Hospital, St. Paul, died in Paris, France, on May 3, after a short illness.

Dr. L. G. Rigler, Minneapolis, was the guest speaker at the April meeting of the Renville County Medical Society held at Olivia, Minn.

Dr. E. J. Schwinghamer has recently opened offices for general practice at Grenora, N. D., where they have been without a doctor for a long time.

Dr. Andrew Sinamark, Hibbing, Minn., has recently taken a post-graduate course at Indianapolis, Ind., in diseases of the ear, nose and throat.

Dr. W. A. Coventry, Duluth, president of the Minnesota State Medical Association, was the principal speaker at Wadena, Minn., on Hospital Day, May 12.

The Children's Hospital, St. Paul, has recently received an endowment of $25,000 from Mr. Leo Vogel, of Mankato, Minn., for favors granted Mr. Vogel in past years.

Staples, Minn., will construct a new hospital during the coming summer months, at a cost of about $40,000. It will be a fire proof building, and modern in every respect.

Dr. L. H. Fredricks, Bismarck, N. D., has been admitted as a member of the American College of Physicians. Dr. Fredricks was a graduate of the University of Minnesota in 1927.

The physicians' and surgeons' offices of Fergus Falls, Minn., will be closed on Saturday afternoons from May 1st until December 1st. However, two doctors will be available for emergency calls.

Dr. R. H. Brown, Watertown, S. D., has retired from the staff of the Branton Clinic, and will continue general practice in that city. Dr. Brown is a graduate of the University of Minnesota in the class of 1926.

The state hospital located at Yankton, N. D., has been obliged to close its doors to admission of more patients, as they are now at the crowding point, and the Legislature failed to provide financial help for an addition to the hospital.

Dr. N. S. MacDonald, Minneapolis, who has been a member of the hospital staff at Fort Snelling for the past 15 years, passed away on May 3, at the age of 64 years, after a brief illness. The doctor was buried at Ann Arbor, Mich.

One of the laws enacted at the last Minnesota Legislature reads as follows: "Every physician or the governing authorities of every hospital on treating persons suffering from gunshot or knife wounds, to report all such cases promptly to the police officials."

Peter J., son of Dr. F. E. Murphy, Minneapolis, has been awarded a year's scholarship in the Yale School of Medicine. Peter received a perfect score in a medical aptitude test conducted at St. Thomas College. He will start his studies at Yale, September 1.

The Manitoba and Ontario Medical Association will hold their annual meeting at Fort William and Port Arthur on May 28, 29, 30 and 31, and they extend a most cordial invitation to all of the

North Dakota Association members to be present, as a most enjoyable program has been arranged.

Dr. Louis T. Pare, who practiced medicine at Duluth for over 25 years, and was well known in medical circles at the "Head of the Lakes," died last month at the residence of his son in New York City. Dr. Pare had retired from active practice in 1925.

The regular meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, St. Paul, Wednesday evening, May 8, with the following papers being presented: "Management of Duodenal Ulcer," Dr. Donald C. Balfour, Rochester; "Graduate Medical Education in Minnesota," Dr. Richard Olding Beard, Minneapolis.

The spring meeting of the Yankton District Medical Society brought out a large attendance on April 24, at Vermilion, S. D., with the following program being presented: "Therapeutic Applications of X-Rays in Medicine," by N. J. Nessa, M. D., Sioux Falls; "The Dental X-Ray as a Diagnostic Aid," by G. G. Bicknell, D.D.S., Yankton. The discussion of these two numbers was opened by Ina Moore Freshour, M. D., Yankton. The third number was "Economics of Organized Medicine," by Will E. Donahue, M. D., Sioux Falls.

Dr. Richard R. Cranmer was elected president of the Hennepin County Medical Society, to succeed Dr. J. M. Hayes next October. Other officers elected are Dr. J. H. Simons, first vice president; Dr. K. A. Phelps, second vice president; Dr. O. J. Campbell, secretary-treasurer; Dr. T. A. Peppard, librarian; Dr. S. A. Baxter and Dr. J. F. Corbett, executive committee; Dr. A. E. Booth and Dr. F. E. Erb, board of censors; Dr. C. R. Drake and Dr. Olga S. Hansen, ethics committee; Dr. Gilbert Cottam and Dr. C. A. Stewart, trustees; Dr. C. J. Ehrenberg, Dr. W. A. Fansler, Dr. C. A. McKinlay, delegates to state convention, with Dr. E. A. Loomis, Dr. W. P. Sadler and Dr. Gilbert Seashore, alternates.

Members of the Hennepin County Medical Society who have practiced medicine for a half century or more, were guests of honor at a dinner sponsored by the society this month. Among the men honored was Dr. Thomas S. Roberts, nationally recognized authority on ornithology. Dr. Roberts was graduated from the University of Pennsylvania medical college in 1885. Dr. Jesse Long, who was graduated from Rush Medical College in 1882, has been a member of the society 35 years. He has occupied the same office for nearly fifty years. The oldest member of the society, Dr. Edward Josiah Brown, was not present, but sent a message of greetings. Dr. Brown was graduated from Dartmouth Medical College in 1879, and retired from active practice several years ago. Others who attended as honored guests were Dr. Thomas F. Quimby, Dr. Jesse Long, Dr. Richard Olding Beard, Dr. Horatio B. Sweetser, Sr., Dr. Ethelbert O. Cosman, Dr. Henry L. Staples, Dr. John Phineas Barber, Dr. Henry Hooker Leavitt and Dr. Ralph St. John Perry.

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The
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Minneapolis, Minnesota
June 1, 1935

Vol. LV, No. 11
New Series

To the Members of the North Dakota, South Dakota and Montana State Medical Associations



I extend to you a cordial invitation to attend the 82nd Annual Meeting of the Minnesota State Medical Association when it meets in joint session with the Medical Section of the American Association for the Advancement of Science in Minneapolis, Minnesota, June 24, 25 and 26, 1935.

I believe this joint meeting will afford you an opportunity to meet, hear and absorb much of a scientific and social nature and amply repay you for your attendance.

Mark your calendar June 24, 25 and 26—all for Minneapolis and a good meeting. Come and enjoy yourself.

W. A. Coventry, M.D., President
Minnesota State Medical Association



As president of the Hennepin County Medical Society, I wish to add a special invitation to that of our state president from Minneapolis medical men.

We hope that as many of you as possible will take this opportunity to visit Minneapolis, renew old acquaintanceships and enjoy the unique program that our association this year with the American Association for the Advancement of Science has made possible.

The Hennepin County Medical Society and Minneapolis will consider itself honored to be your hosts for this meeting.

J. M. Hayes, M.D., President
Hennepin County Medical Society

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Space—H. J. Tunstead, R. P. Caron, H. W. Christianson, C. J. Ehrenberg, C. A. McKinlay, R. S. Ylvisaker.
Banquet—E. S. Platou, S. C. Andersen, C. A. Boreen, G. D. Eitel, J. T. Lapierre.
Entertainment—M. Nordland, W. B. Roberts, M. J. Shapiro, A. E. Smith, S. B. Solhaug, T. H. Sweetser.
Reunions—Olga S. Hansen, W. H. Aurand, L. M. Daniel, H. G. Irvine, F. B. Mach, J. C. Michael.

Subcommittee on Fraternity Reunions

L. H. Cady.....Phi Chi
E. W. Hansen.....Alpha Kappa Kappa
Eleanor J. Hill.....Alpha Epsilon Iota
A. B. Johnson.....Theta Kappa Psi
A. B. Litman.....Phi Delta Epsilon
Horace Newhart.....Phi Rho Sigma
E. A. Regnier.....Phi Beta Pi
O. S. Wyatt.....Nu Sigma Nu

Sports—H. M. Lee, S. R. Maxeiner, Donald McCarthy, W. P. Sadler, D. D. Turnacliff.
Publicity—J. A. Watson, Gilbert Cottam, F. A. Erb, J. S. Reynolds, S. Marx White, Thomas Ziskin.
Telephone—T. W. Weum, Reuben Erickson, L. O. Doyle, Ivar Sivertsen, Norman Smith, M. A. Vogtel.
Hotel Reservations—A. E. Cardle, R. H. Creighton, R. E. Swanson.

ANNUAL MEETING of the MINNESOTA STATE MEDICAL ASSOCIATION

Fifteen outstanding medical men of the United States, noted in various fields of medicine, will be speakers at the eighty-second annual meeting of the Minnesota State Medical Association to be held in the Minneapolis Auditorium June 24, 25 and 26.

Of great importance to physicians of Minnesota and the Northwest attending the meeting will be two joint sessions to be held with the Medical Section of the American Association for the Advancement of Science which will meet during the same week at the University of Minnesota.

The first of these sessions will be Monday night when Dr. William P. Murphy of Harvard Medical School, 1934 Nobel Prize Winner, will speak on "Diseases of the Blood."

The second session will be Tuesday morning and will be featured by a symposium on blood diseases. Taking part will be Dr. Murphy, who will speak on the treatment of anemia with liver; Dr. Theodore L. Squier of Milwaukee, who will speak on the role of drugs in granulocytopenia, and Dr. W. A. Bloedorn, Washington, D. C., who will discuss iron in the treatment of anemia.

Completing this morning program will be a talk on the prevention of whooping cough with vaccine by Dr. L. W. Sauer, Associate in Pediatrics, Northwestern University Medical School.

Four well-known surgeons are included among the speakers. They are Dr. Frank Lahey of Boston, who will speak on hyperthyroidism and hyperparathyroidism; Dr. Edmund Andrews of Chicago, who will talk on gall bladder disease; Dr.

Thomas G. Orr, Kansas City, Missouri, who will discuss venoclysis, and Dr. J. F. Barnhill of Indianapolis, who will talk on suppurations of the neck.

Other speakers include Dr. Percy Brown of Boston, who will give the second annual Russell D. Carman Memorial lecture on the development of fluoroscopy; Dr. Harry L. Alexander, St. Louis; Dr. E. L. Sevringhaus, Madison; Dr. E. D. Plass, Iowa City; Dr. W. S. Middleton, Madison, and Dr. Richard Pearson Strong, Boston.

Two hours of program time each day will be devoted exclusively to scientific demonstrations and exhibits, which form a larger and more interesting part of the program than ever before. Outstanding among these exhibits will be one of animals treated with pineal and thymus gland extracts isolated by Dr. Adolph Hanson of Faribault. The exhibit will be brought to Minneapolis from the Philadelphia Institute for Medical Research of the University of Pennsylvania by Arthur Steinberg, Ph.D. The experimental work with the extracts has been carried on by Dr. L. G. Rowntree and his associates at the institute. Besides other animals, Mr. Steinberg will bring pregnant rats far enough along in gestation to yield litters during the meeting period or shortly before so that animals will be shown at the height of their precosity or retardation as the case may be. There will be many other outstanding exhibits, which will number nearly 50, a complete list of which is printed elsewhere.

Dr. Hanson himself will talk and show a film prepared by Dr. Rowntree, on the experimental use of his extracts in connection with a clinic to be conducted Monday morning by University of Minnesota doctors. A second clinic will be given Wednesday morning by doctors of the Mayo Clinic, Rochester.

Other unusual features of the program will include a lecture course on medical economics and business management for doctors, to be given by Mr. Theodore Wiprud, executive secretary of the Milwaukee County Medical Association. The lectures will be given each morning from 9 to 11 o'clock and will be discussed by Dr. R. G. Leland, director of the Bureau of Medical Economics, American Medical Association. This course, designed especially for young physicians and clinic and office managers, has been given by Mr. Wiprud at Marquette University.

A Medical Question Court will close the Wednesday afternoon program. Dr. William A. O'Brien, of the University, who is chairman of the court, will be assisted by a group of specialists in various medical fields, who will be prepared to answer the questions of all comers.

A program of scientific cinema will be conducted throughout the three days, with films to be shown on several subjects, including the eye, ear, cancer, hygiene of swimming, first aid treatment for fractures and others.

Entertainment will not be neglected during the session. The annual dinner will be held Tuesday night, followed by a program and entertainment being arranged by the Hennepin County Medical Society. There will also be a number of class and fraternity reunions.

PROGRAM

MONDAY, JUNE 24

PRESIDING OFFICERS

Section on Surgery—H. B. Zimmermann, Chairman; Harry Klein, Secretary.

Section on Medicine—F. H. K. Schaaf, Chairman; P. P. Vinson, Secretary.

Morning Session

8:00—University of Minnesota Clinics.
"Diseases Characterized by Prolonged Fever," Hobart A. Reimann, Minneapolis.
"Allergy in Childhood," A. V. Stoesser, Minneapolis.
"Some Surgical Problems," W. T. Peyton, Minneapolis.

9:30—"Biological Effects of Thymus and Pineal Extracts (Hanson)." Report of the work carried on by L. G. Rowntree, J. H. Clark and Arthur Steinberg, Ph.D., of the Philadelphia Institute for Medical Research, and A. M. Hanson, Hanson Research Laboratory, Faribault, with moving picture film.

10:00—Scientific demonstrations and exhibits.

11:00—Citizens Aid Society Memorial Address.

12:00—Lunch.

Afternoon Session

1:00—"The Present Status of Clinical Allergy," Harry L. Alexander, St. Louis, Associate Professor of Medicine, Washington University, School of Medicine, and Associate Physician at Barnes Hospital. *Minneapolis Clinical Club, sponsor.*

2:00—Scientific demonstrations and exhibits.

3:00—"Some of the Newer Developments in Hyperthyroidism and Hyperparathyroidism," Frank H. Lahey, Boston, Surgeon-in-Chief to the New England Baptist Hospital, Surgeon to the New England Deaconess Hospital, and Director, Surgery, Lahey Clinic. *Minneapolis Surgical Society, sponsor.*

4:00—"The Pathogenesis of Gall-Bladder Disease," Edmund Andrews, Chicago, Professor of Surgery, The University of Chicago, and Attending Surgeon at the Billings Hospitals.

Monday Night Joint Session

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
and
MINNESOTA STATE MEDICAL ASSOCIATION

Presiding Officers

Karl T. Compton, President A. A. A. S.
W. A. Coventry, President M. S. M. A.

Northrop Memorial Auditorium

8:00—Address: "Diseases of the Blood," William P. Murphy, Boston.

TUESDAY, JUNE 25

Presiding Officers

F. H. K. Schaaf Vincent du Vigneaud
H. B. Zimmermann

Joint Session

With Section on Medical Sciences, American Association for the Advancement of Science

Morning Session

8:00—Symposium on Diseases of the Blood.

"The Role of Drug Allergy in the Etiology of Primary Granulocytopenia," T. L. Squier, Milwaukee, Associate Clinical Professor of Medicine, Marquette Medical School; F. G. Madison, Assistant Clinical Professor, Marquette Medical School (co-author). *A. A. A. S., sponsor.*

"The Role of Iron in the Treatment of Anemia," W. A. Bloedorn, Washington, D. C., Professor of Medicine and Executive Officer, Department of Medicine, George Washington University School of Medicine; Medical Director, George Washington University Hospital, and Chief of Staff, Gallinger Municipal Hospital. *A. A. A. S., sponsor.*

"What We Have Learned About Pernicious Anemia During Ten Years of Treatment with Liver," William P. Murphy, Boston, 1934 Nobel Prize Winner in Physiology and Medicine; Instructor in Medicine, Harvard University Medical School; Senior Associate in Medicine, Peter Bent Brigham Hospital. *Hennepin County Medical Society, sponsor.*

10:00—Scientific demonstrations and exhibits.

11:00—"The Prevention of Whooping Cough with Bacillus Pertussis Vaccine," L. W. Sauer, Evanston, Ill., Associate in Pediatrics, Northwestern University Medical School. *Northwestern Pediatrics Society, sponsor.*
Discussants—H. F. Helmholtz, Rochester; Irvine McQuarrie, Minneapolis, and O. W. Rowe, Duluth.

12:00—Lunch.

Afternoon Session

1:00—Russell D. Carman Memorial Lecture: "The Inception and Development of Fluoroscopy: The Influence of Carman on Its Status in America," Percy Brown, Boston, Former Instructor in Roentgenology, Harvard University Medical School; Former Director X-Ray Department for Diagnosis, St. Luke's Hospital, New York City; Gold Medallist, Radiological Society of North America; Past President, American Roentgen Ray Society. *Minnesota Radiological Society, sponsor.*

2:00—Scientific demonstrations and exhibits.

3:00—"Endocrine Therapy," E. L. Sevringhaus, Madison, Associate Physician of Wisconsin General Hospital, and Associate Professor of Medicine, University of Wisconsin.

4:00—"Simplification of Obstetric Care," E. D. Plass, Iowa City, Professor and Head of Department of Obstetrics and Gynecology, State University of Iowa.

Annual Banquet, Tuesday Evening

MINNESOTA STATE MEDICAL ASSOCIATION
and
WOMEN'S AUXILIARY

The Leamington

Hosts—Hennepin County Medical Society and Women's Auxiliary

5:30—Aperitif hour.

6:00—Informal dinner and get-together.

8:00—Address of Welcome—J. M. Hayes, Minneapolis, President Hennepin County Medical Society.
President's Address—W. A. Coventry, Duluth.
Introduction of President-elect.
The Women's Auxiliary—Mrs. F. J. Elias, Duluth, President-elect.

8:30—Hennepin County Medics and Auxiliary.
"No Speeches — Colorful Entertainment — No Dull Moments."
Followed by dancing.

WEDNESDAY, JUNE 26

Presiding Officers

Section on Medicine—F. H. K. Schaaf, Chairman; P. P. Vinson, Secretary.

Section on Surgery—H. B. Zimmermann, Chairman; Harry Klein, Secretary.

Morning Session

8:00—Clinic.

"The Diagnosis and Management of Diseases of the Large Bowel," J. O. Bargen, H. M. Weber, T. B. Magath, C. F. Dixon, of Mayo Clinic, Rochester.

10:00—Scientific demonstrations and exhibits.

11:00—"Venoclysis—A Consideration of Its Possible Dangers," Thomas G. Orr, Kansas City, Mo., Professor of Surgery, University of Kansas, and Surgeon-in-Chief to the University of Kansas Hospital.

12:00—Lunch.

Afternoon Session

1:00—"Suppurations of the Neck, Cause, Diagnosis and Treatment," J. F. Barnhill, Indianapolis, Professor of Surgery of the Head and Neck, Indiana University School of Medicine. *Minnesota Academy of Ophthalmology and Otolaryngology, sponsor.*

2:00—Scientific demonstrations and exhibits.

3:00—"The Prognosis and Treatment of Coronary Occlusion," W. S. Middleton, Madison, Professor of Medicine, University of Wisconsin.

4:00—Medical Question Court—W. A. O'Brien, Minneapolis, Chairman.

THURSDAY, JUNE 27

SECTION ON MEDICAL SCIENCES (Section N) AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Morning Session

10:00—Meeting at the Mayo Foundation, Plummer Hall, Mayo Clinic and Foundation Building, Rochester.

Remarks—W. J. Mayo.

"Investigation of the Hormone of the Suprarenal Cortex," E. C. Kendall, The Mayo Foundation.

"Coronary Disease," A. R. Barnes, The Mayo Foundation.

"Review of Recent Work on Blood Flow," F. C. Mann, The Mayo Foundation.

"Results of Surgery of the Thyroid Gland," J. D. Pemberton, The Mayo Foundation.

"Quantitative Aspects of the Insensible Loss of Weight," L. W. Newburgh, School of Medicine, University of Michigan.

"The Use of Pituitary Extract in Patients with Hypogonadism," E. L. Sevringhaus, The Medi-School, University of Wisconsin.

Afternoon Session

2:00-3:00—Visit to the Experimental Institute.

3:30-4:30—Visit to Hygienic Museum.

4:30-5:00—Visit to the General Offices of The Mayo Foundation.

SCIENTIFIC CINEMA

Presiding Officers

Gilbert Cottam, L. M. Daniel, E. K. Green and J. A. Watson, Minneapolis

MONDAY, JUNE 24

Morning Session

8:00—"Canti and Chambers Films."

F. L. Rector, Lecturer, New York.

Courtesy American Society for the Control of Cancer.

9:00—"A Short Course in Medical Economics."

Theodore Wiprud, Lecturer.

Executive Secretary of the Milwaukee County Medical Society and lecturer on Medical Economics at Marquette University, Milwaukee.

R. G. Leland, Discussant.

Director of the Bureau of Medical Economics of the American Medical Association, Chicago.

Subjects:

"Medical Economics, Business Methods, and Investments."

"Medical Charity: Where Should It Stop?"

"Fair Competition Among Physicians."

"Contract and Panel Practice."

"Health Insurance."

"Organized Medicine Meets Current Problems."

Mr. Wiprud will present this course of six lectures, two daily. The present economic problems that are facing the medical profession will be discussed, as will also practical methods of business management of the physician's office.

11:00—"Physical Therapy."

Howard Carter, Lecturer.

Secretary of the Council on Physical Therapy of the American Medical Association, Chicago.

Demonstrational lecture using physical apparatus to illustrate the production of high frequency currents; also showing the relation between mechanical, electrical and heat energy. Discussion of the meaning of certain physical electrical concepts and units.

12:00—Lunch.

Afternoon Session

1:00—"Female Sex Cycle."

Courtesy Schering Corporation, Bloomfield, N. J.

1:45—"The Management of Strabismus."

Walter H. Fink, Lecturer, Minneapolis.

2:00—"First Aid Treatment of Fractures By Improvised Splints for the Purpose of Transportation."

Willis C. Campbell, Producer, Memphis, Tenn.

E. T. Evans and P. W. Giessler, Lecturers, Minneapolis.

2:30—"Magnet Operation for Removal of Steel and Acute Mastoidectomy."

Charles N. Spratt, Lecturer, Minneapolis.

3:00—"Hygiene of Swimming."

H. M. Taylor, Producer, Jacksonville, Fla.

Horace Newhart, Lecturer, Minneapolis.

4:00—"Communicable Disease Nursing."

School of Nursing and General College, University of Minnesota.

NATIONAL SPEAKERS TO BE PRESENT



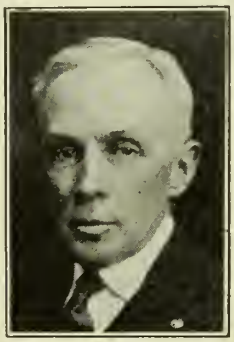
DR. EDMUND ANDREWS
Chicago, Ill.



DR. HARRY L. ALEXANDER
St. Louis, Mo.



DR. J. F. BARNHILL
Indianapolis, Ind.



DR. PERCY BROWN
Boston, Mass.



DR. FRANK H. LAHEY
Boston, Mass.



DR. WM. S. MIDDLETON
Madison, Wis.



DR. WM. P. MURPHY
Boston, Mass.



DR. THOMAS G. ORR
Kansas City, Mo.



DR. E. D. PLASS
Iowa City, Ia.



DR. E. L. SEVRINGHAUS
Madison, Wis.



MR. THEODORE WIPRUD
Milwaukee, Wis.

BIOGRAPHICAL SKETCHES OF SPEAKERS at the EIGHTY-SECOND ANNUAL MEETING of the MINNESOTA STATE MEDICAL ASSOCIATION

Dr. Harry L. Alexander of St. Louis is Associate Professor of Medicine at Washington University and Associate Physician at Barnes Hospital. He was formerly instructor in medicine at Cornell University Medical School and did research and conducted the Allergy Department of the Cornell Clinic. He is past-president of the Society for the Study of Asthma and Allied Conditions and editor of the Journal of Allergy. He will speak on "The Present Status of Clinical Allergy" Monday afternoon at 1 o'clock. He comes under the auspices of the Minneapolis Clinical Club.

Dr. Edmund Andrews of Chicago is Professor of Surgery, University of Chicago, and Attending Surgeon at the Billings Hospital. He has served on the staffs of the Mercy, Michael Reese and St. Luke's Hospitals in Chicago. He will speak on "The Pathogenesis of Gall-Bladder Disease" Monday afternoon at 4 o'clock.

Dr. John F. Barnhill of Indianapolis is Professor of Surgery of the Head and Neck. Indiana University School of Medicine. He is past-president of the American Academy of Ophthalmology and Otolaryngology and has served as an officer of the American Ear, Throat and Nose Association and as chairman of the Ear and Throat Section, American Medical Association. He will speak on "Suppurations of the Neck; Cause, Diagnosis and Treatment" Wednesday afternoon at 1 o'clock. He is sponsored by the Minnesota Academy of Ophthalmology and Otolaryngology.

Dr. W. A. Bloedorn of Washington, D. C. is Professor of Medicine and Executive Officer of the Department of Medicine, George Washington School of Medicine; Medical Director of the George Washington University Hospital and Chief of Staff, Gallinger Municipal Hospital, Washington, D. C. He will will speak on "The Role of Iron in the Treatment of Anemia" at the Symposium on Blood Diseases Tuesday morning. He is guest speaker of the American Association for the Advancement of Science.

Dr. Percy Brown of Boston is a pioneer radiologist. He was formerly instructor in Roentgenology at Harvard University Medical School and Director of the X-ray Department for Diagnosis at St. Luke's Hospital, New York City. He is a gold medallist of the Radiological Society of North America and past-president of the American Roentgen Ray Society. He will give the second annual Russell D. Carman Memorial Lecture on "The Inception and Development of Fluoroscopy; The Influence of Carman on its Status in America" Tuesday afternoon at 1 o'clock. He is sponsored by the Minnesota Radiological Society.

Dr. Frank H. Lahey of Boston is Director of Surgery at the Lahey Clinic, Surgeon-in-Chief to the New England Baptist Hospital and Surgeon to the New England Deaconess Hospital. He was formerly Professor of Surgery at Tufts Medical School and Professor of Clinical Surgery at Harvard Medical School. He will speak on "Some of the Newer Developments in Hyperthyroidism and Hyperparathyroidism" Monday afternoon at 3 o'clock. He comes at the invitation of the Minneapolis Surgical Society.

Dr. William S. Middleton of Madison, Wisconsin, is Professor of Medicine at the University of Wisconsin. He has been with the University Medical School since 1912 when he completed his internship at Philadelphia General Hospital. He will speak on "The Prognosis and Treatment of Coronary Occlusion" Wednesday afternoon at 3 o'clock.

Dr. William P. Murphy of Boston is a 1934 Nobel Prize Winner in Medicine and Physiology. He is Senior Associate in Medicine at the Peter Bent Brigham Hospital and Instructor in Medicine at Harvard University Medical School. He has carried on research at the Peter Bent Brigham Hospital on diabetes and on diseases of the blood. He was a co-discoverer of the liver treatment for pernicious anemia. He will speak on "Diseases of the Blood" at the Monday night joint session with the American Association for the Advancement of Science, and on "What We Have Learned During Ten Years of Treatment of Pernicious Anemia with Liver" at the Symposium on Blood Diseases Tuesday morning. The Hennepin County Medical Society is sponsoring Dr. Murphy's lectures in Minneapolis.

Dr. Thomas G. Orr of Kansas City, Missouri, is Professor of Surgery, University of Kansas, and Surgeon-in-Chief to the University of Kansas Hospital. His publications number about 150 including a small book on the modern treatment of amputations. His chief interest has been in intestinal obstruction and peritonitis. He will

speak on "Venoclysis—A Consideration of Its Possible Dangers" Wednesday morning at 11 o'clock.

Dr. E. D. Plass of Iowa City is Professor and Head of the Department of Obstetrics and Gynecology, State University of Iowa, and is Secretary of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association. He was formerly connected with the Department of Obstetrics, Johns Hopkins Hospital, the Sloane Hospital for Women, New York City, and was Obstetrician-in-Chief, Henry Ford Hospital, Detroit, Michigan. He will speak on the "Simplification of Obstetric Care" Tuesday afternoon at 4 o'clock.

Dr L. W. Sauer of Evanston, Illinois, is Associate in Pediatrics at Northwestern University Medical School. He will speak on "The Prevention of Whooping Cough with Bacillus Pertussis Vaccine" on the Tuesday morning program at 11 o'clock. He is the guest of the Northwestern Pediatrics Society.

Dr. Elmer L. Sevringhaus of Madison, Wisconsin, is Associate Physician of the Wisconsin General Hospital and Associate Professor of Medicine, University of Wisconsin. He has been connected with the University since 1922 and has been responsible for metabolic and endocrine disease. He will speak on "Endocrine Therapy" Tuesday afternoon at 3 o'clock.

Dr. Theodore L. Squier of Milwaukee, Wisconsin, is Associate Professor of Medicine, Marquette University. He was formerly Instructor in Medicine, University of Michigan Medical School; Medical Director, Calhoun Tuberculosis Hospital, Battle Creek, Michigan, and Medical Director of A. O. Smith, Department of Preventative Medicine, Milwaukee. He will speak on "The Role of Drug Allergy in the Etiology of Primary Granulocytopenia" at the Symposium on Blood Diseases Tuesday morning. He is sponsored by the American Association for the Advancement of Science.

THE SCIENTIFIC EXHIBIT

The scientific exhibit at the Minnesota State Medical Association meeting this year is especially valuable. The convention plans to follow the same plan as last year of having small group demonstrations and conferences in the exhibit hall. It is notable this year in that the medical section of the American Association for the Advancement of Science will meet in joint session with the Minnesota State Medical Association in the Auditorium, and registration badges will admit members of both organizations to the meetings of both societies. Among the scientific exhibits will be those of Dr. R. M. Wilder, of the Mayo Clinic, on diabetes, to be exhibited at the American Medical Association meeting in Atlantic City, on June 10 to 14, the American Medical Association, the A. M. A. Council on Physical Therapy, the exhibit of the Mayo Clinic at Rochester, the injection treatment of hernia by Dr. Arthur F. Bratrud, of Minneapolis; the University of Minnesota's exhibit, the heart exhibit by Dr. M. H. Nathanson of Minneapolis, and many others. These exhibits are a vital part of the meeting itself, and it is hoped that every physician will make use of them to the utmost.

AMERICAN MEDICAL ASSOCIATION

Hospitals in the United States

Charts, mechanical equipment, literature.

Council on Medical Education and Hospitals, and Bureau of Medical Economics.

Application of Physical Therapy

Demonstration showing capillaries in the skin at the base of the finger nail. Demonstration of physical therapy treatments including diathermy machine, homemade apparatus, application of the wet pack. Moving pictures showing the effect of heat and cold on blood circulation. Charts dealing with various phases of physical therapy. Demonstrational lecture using physical apparatus to illustrate the production of high frequency diathermy currents; also showing the relation between mechanical, electrical and heat energy. Discussion of the meaning of certain physical electrical concepts and units.

Council on Physical Therapy.

BIOLOGIC EXHIBIT

United States Public Health Service, Washington, D. C.

Traveling Salon of the Biological Photographic Association

Medical photography.

Mr. John M. Muir, Oak Terrace.

Cancer

Showing skin, mouth, breast and uterus malignant growths by means of wax models, charts and photographs. Canti and Chambers films to be shown in Scientific Cinema.

American Society for the Control of Cancer, under the auspices of the Minnesota State Medical Association Committee on Cancer.

Carbon Monoxide Poisoning

Diagnosis and treatment. Demonstration of inhalator and apparatus for blood analysis to detect carbon monoxide. Films.

F. J. Elias, Duluth.

Cardiac Standstill—Prevention and Treatment

Demonstration of the action of drugs in prevention of cardiac syncope and sudden death.

M. H. Nathanson, Minneapolis.

Under the auspices of the Minnesota Public Health Association Heart Committee.

Cardio-Amplifier and Heart Sound Tracings

Demonstration with patients.

Paul F. Dwan, Minneapolis.

Prevention and Treatment of Childhood Infectious Disease

Erling S. Platou, Minneapolis.

Natural History of Childhood Rheumatism in Minnesota

M. J. Shapiro, Minneapolis.

Civilian Conservation Corps

Model of a typical camp hospital with the "war chest" equipment now in use, which is the same as that used by the medical corps in the war.

Station Hospital Staff, Fort Snelling.

Deafness Prevention and Amelioration

Demonstration of hearing tests and hearing aids.

Horace Newhart, Minneapolis.

Under the auspices of the Minnesota State Medical Association Committee on Deafness Prevention and Amelioration.

Dental Health

W. A. Dvorak, D.D.S., Chairman, Oral Hygiene Committee of the Minnesota State Dental Association.

Diseases of the Hip Joint

Trans-lite photographs.

V. L. Hart, Minneapolis.

Effects of Early Post Operative Feeding

O. I. Sohlberg, St. Paul.

Elliott Treatment for Pelvic Inflammatory Processes

Demonstration of the use of the Elliott machine.

W. A. Hanson and L. H. Fowler, Minneapolis.

Endocrine Studies

Drawings of pituitary, ovary and charts for functions of same. Photographs of cases illustrating various dysfunctions of the endocrines. Animals that have been injected with the various extracts, growth, thyrotropic, etc. Lantern slides.

L. F. Hawkinson, Brainerd.

Related Conditions in the Eyes in Diabetes

Minnesota Academy of Ophthalmology and Otolaryngology and Associates.

Injection Treatment of Hernia

Cases in process of treatment. Actual injection of patient.

A. F. Bratrud, Minneapolis.

Immunization

Demonstration of the Mantoux Test, diphtheria immunization and vaccination.

Under the auspices of the Minnesota State Medical Association Committee on Public Health Education.

FACTORS IN LIFE EXPECTANCY OF OUR CITIZENS

Minnesota Department of Health, A. J. Chesley, Secretary and Executive Officer.

Division of Child Hygiene

E. C. Hartley, Director.

Division of Preventable Diseases

Orianna McDaniel, Director.

Division of Sanitation

Mr. H. A. Whittaker, Director.

Division of Vital Statistics

Mrs. Gerda C. Pierson, Director.

MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH

Differential Diagnosis of Asthma

A semi-diagrammatic model through the head and thorax revealing a number of representative lesions in the respiratory passages, lungs and certain adjacent organs, which may produce symptoms that may easily be mistaken for asthma. Transparencies supplement the model.

L. E. Prickman.

Diets for the Diabetic Patient

A survey of the various diets that have been prescribed from time to time before the discovery of insulin, and diets that have now become available for the diabetic patients following the discovery of insulin.

R. M. Wilder.

Under the auspices of the Minnesota State Medical Association Committee on Diabetes.

Diaphragmatic Hernia and Intrathoracic Tumors

Clinical signs of various types of diaphragmatic hernia and intrathoracic tumors, together with their surgical treatment. Radiograms show the herniated viscera on admission and after surgical repair of the hernia. Moulages show the location of the various defects and openings in the diaphragm and the herniated viscera as found at operation. Drawings and moulages show the various stages in the technic of the surgical treatment of repair of the hernia. Exhibit of intrathoracic tumors consists of the anterior and posterior mediastinal growths, as well as intrathoracic tumors of the chest wall which protrude into the thoracic cavity. Motion pictures, taken at operation, will be shown.

S. W. Harrington.

Experimental Studies on the Diaphragm of the Dog

Drawings, photographs and photomicrographs show the enervation of the diaphragm, its lymphatic system and disturbances in its function following phrenic exeresis.

W. S. Lemon, G. M. Higgins, Ph.D., and A. S. Graham.

Fever Therapy

Fundamental principles of fever induced by physical methods and its application to diseases such as gonococcal infections, arthritis, etc. Charts of temperature and pulse from actual cases treated, photographs of the air-conditioned fever chamber (Kettering Hypertherm), criteria for selection of cases, conditions for effective treatment, contra-indications, mode of action, etc.

A. U. Desjardins and W. C. Popp.

Idiopathic Steatorrhea (Nontropical Sprue)

Case showing anemia, macrocytosis, subacute combined sclerosis, glossitis, osteoporosis, and nutritional edema is presented to show the general features of the syndrome. This is done by transparencies, photographs of the patient, neurological changes, blood, gastric acidity, X-rays of the intestines and bones, metabolism of fat and nitrogen, calcium and phosphorus disturbances, nutritional edema, treatment and its effects.

A. M. Snell, J. F. Weir, J. D. Camp, C. H. Watkins, and Mildred Adams.

MEDICAL AUXILIARY

Mrs. Martin Nordland, President.

Minneapolis Public Health

Division of Public Health, City of Minneapolis.

F. E. Harrington, Commissioner of Health.

Minnesota Medicine

Medical Journal of the Minnesota State Medical Association. Exhibit arranged by Mr. J. R. Bruce, publisher.

MINNESOTA PUBLIC HEALTH ASSOCIATION

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

MINNESOTA STATE MEDICAL ASSOCIATION COMMITTEES

Cancer

See exhibit on Cancer of the American Society for the Control of Cancer under the auspices of this committee.

Martin Nordland, Chairman, Minneapolis.

Deafness Prevention and Amelioration

Horace Newhart, Chairman, Minneapolis.

Diabetes

R. M. Wilder, Chairman, Rochester.

Hospitals and Medical Education

C. A. McKinlay, Chairman, Minneapolis.

Industrial Relations

J. M. Hayes, Chairman, Minneapolis.

Medical Economics

W. F. Braasch, Chairman, Rochester.

Public Health Education

See demonstration on Immunization, under the auspices of this committee.

L. R. Critchfield, Chairman, St. Paul.

State Health Relations

T. H. Sweetser, Chairman, Minneapolis.

University Relations

F. J. Savage, Chairman, St. Paul.

Nursing the Community

Minnesota Nurses Association.

Orthopedics

Gillette State Hospital for Crippled Children, St. Paul.

Parent-Teacher Health Program

Mrs. C. L. Hayes, Chairman, "The Summer Round-Up," Minnesota Congress of Parents and Teachers.

Physical Therapy

Demonstrations on patients. Exhibit of fracture treatment and treatment of erysipelas with ultra violet. Charts showing indications and physiological basis for the use of the more common physical therapy modalities.

M. E. Knapp, Minneapolis.

Professional Pharmacy

Under the auspices of the Interprofessional Relationships Committee of the Minnesota State Pharmaceutical Association.

The Management of Strabismus

Film.

Walter H. Fink, Minneapolis.

Under the auspices of the Minnesota Academy of Ophthalmology and Otolaryngology.

Biological Effects of Thymus and Pineal Extracts (Hanson)

An exhibit of live animals to demonstrate the effects of Thymus and Pineal Extracts (Hanson). Arthur Steinberg, Ph.D., of the Philadelphia Institute for Medical Research, will be present to discuss the experiments.

L. G. Rowntree, A. M. Hanson, J. H. Clark and Arthur Steinberg, Ph.D.

Philadelphia Institute for Medical Research and Hanson Research Laboratory, Faribault, Minn.

Trichomonas Vaginalis

Charts and specimens.

W. A. Coventry and R. J. Moe, Duluth.

Tuberculosis of the Ear

Wax models.

S. S. Cohen, Glen Lake Sanatorium, Oak Terrace.

Tuberculosis of the Mouth

Wax models.

F. L. Jennings, W. L. Wilson, D.D.S., and J. C. Bryant, D.D.S., Glen Lake Sanatorium, Oak Terrace.

Tuberculosis School Surveys

H. Longstreet Taylor Foundation, Pokegama Sanatorium, Pokegama.

UNIVERSITY OF MINNESOTA

The Incidence of Benign Tumors of the Stomach

L. G. Rigler and L. G. Ericksen.

Models Showing Normal and Abnormal Chest Development

These models show the normal development of the human chest from birth to the adult state. The models also depict the difference between normal and tuberculous chests. Charts and diagrams show these chests in cross sections and explain the changes in thoracic indices.

S. A. Weisman.

The Use of Contrast Media in Roentgen Diagnosis

L. G. Rigler.

Progress in Diphtheria Prevention

Charts to show results of experience with diphtheria immunization during the past six or seven years. Data on toxin-antitoxin, toxoid and alum-precipitated toxoid to show the results of the use of these types of immunizing material.

Ruth E. Boynton, Students' Health Service.

Hay Fever Causes for Minnesota

R. V. Ellis, C. O. Rosendahl, Ph.D., and A. O. Dahl, M.S.

The Occurrence of Tularemia in Man and Animals

R. G. Green.

Treatment of Varicose Veins and Ulcers

Patients showing different stages of treatment. Actual injections.

H. W. Froehlich and Staff, Minneapolis General Hospital.

COMMERCIAL EXHIBITORS AT THE CONVENTION

Commercial firms who will be exhibitors at the 82nd Minnesota State Medical Association meeting at the Auditorium in Minneapolis on June 24, 25 and 26 are listed below. Each year the number of these exhibits has increased, until at the present time a tour through this section of the convention is highly instructive and valuable in itself. These commercial exhibits will be conveniently arranged and pleasantly presented, and it will be to the advantage of the physician to investigate these products to the fullest extent.

Abbott Laboratories, North Chicago, Ill.
C. F. Anderson Co., Inc., Minneapolis.
Antioch Shoe Shop, Minneapolis.
Ayerst, McKenna & Harrison, Montreal, Quebec.
Bard-Parker Co., Inc., Danbury, Conn.
Bilhuber Knoll Corp., Jersey City, N. J.
Brown & Day, Inc., St. Paul.
Burroughs Wellcome, New York City.
Cambridge Instrument Co., New York City.
Chippewa Springs Corp., Minneapolis.
Jos. E. Dahl Co., Minneapolis.
Danielson's Medical Arts Pharmacy, Minneapolis.
DeVilbiss Co., Toledo, Ohio.
Do-More Seating Service, St. Paul.
Ford Motors, Minneapolis.
General Electric X-ray Corp., Minneapolis.
General Food Sales Co., New York.
Gerber Products Division, Fremont, Mich.
Health Products Corp., Newark, N. J.
H. J. Heinz Co., Pittsburgh, Pa.
Horlick's Malted Milk Corp., Racine, Wis.
Kellogg Co., Battle Creek, Mich.
Lea & Febiger, Publishers, Philadelphia, Pa.
Lederle Laboratories, New York, N. Y.
Mead Johnson Co., Evansville, Ind.
Medical Protective of Fort Wayne, Wheaton, Ill.
Mellin's Food Co., Boston, Mass.
Merck & Co., Rahway, N. J.
Wm. S. Merrell Co., Cincinnati, Ohio.
Minneapolis Artificial Limb Co., Minneapolis.
Minnesota Medical Finance Corp., Minneapolis.
V. Mueller & Co., Chicago, Ill.
Pengelly X-ray Co., Minneapolis.
Petrolagar Laboratories, Chicago, Ill.
Physicians & Hospitals Supply Co., Minneapolis.
Schering Corp., New York.
S. M. A. Corporation, Cleveland, Ohio.
Sharp & Smith, Chicago, Ill.
E. R. Squibb & Sons, New York City.
Standard X-ray, Chicago.
Twin City Optical Houses consisting of American Optical Co., N. P. Benson Optical Co., Riggs Optical Co., Twin City Optical Co., and Walman Optical Co.
Upsher Smith Co., Minneapolis.
U. S. Hospital Supply, Minneapolis.
Winthrop Chemical Co., New York City.

REGISTRATION

There will be no registration fee for those who present a membership card or receipt from their County or State Societies or from the American Medical Association or for the associated professions invited who present the proper invitation or identification card. In the absence of the above, proper identification and guest cards will be accepted.

Registration on Monday, Tuesday and Wednesday will be at the Auditorium; Sunday registration will be at the Leamington. The Registration Badge of the Minnesota State Medical Association will entitle members to attend all sessions of the American Association for the Advancement of Science.

Factors Concerned in the Diagnosis of Heart Disease*

Fredk. A. Willius, M.D.†
Rochester, Minn.

THE progressively increasing incidence of heart disease and its resultant high mortality in the United States has given it a sinister significance to laymen and physicians alike. This situation is bringing new, and often difficult, problems to the profession in passing judgment on the integrity of the hearts of many patients when the organ is normal and disease is suspected or when the subtle inception of disease may have occurred.

Thus, the first consideration in the diagnosis of heart disease is distinction between the normal heart and the diseased heart. This decision must be clearly and emphatically made so that the anxiety and uncertainty of the patient may be allayed, or the manner of living altered to safeguard against the hazards of the disease. Indecision and uncertainty on the part of the physician is quickly transmitted to the patient and disastrous results often ensue. If the physician cannot positively determine this question, either because of lack of a comprehensive knowledge of the subject or through lack of necessary diagnostic adjuncts, he would invite far greater respect and confidence from his patient if he would admit frankly that he was unable to arrive at a diagnosis than he would if he allowed the problem to remain unsolved until disaster renders the decision. The physician should feel free to consult with his colleagues and should always give his patient the benefit of the doubt. The science of medicine is so vast that no man can be expected to be a master in all of its branches. The success of co-operative practice of medicine is based on this premise.

Cardiac diagnosis comprises both the science and the art of medicine, in which the history is carefully recorded, physical findings are painstakingly determined, disturbances in physiology are searched for, accessory laboratory methods of detection are employed, and the results of these investigations are judiciously appraised. Thus, the various fragments of positive evidence are patched together, others being relegated by elimination, until the true nature of the problem is revealed. Diagnostic perfection is an unattainable goal, but the constant demand for the truth, even though, at times, it may prove to be embarrassing, is the nearest approach to perfection.

The first consideration in the diagnosis of disease is the elicitation of an accurate history of the case. The age of the patient is important because various forms of heart disease occur predominantly in certain age periods. For example, during infancy and early childhood the presence of a cardiopathy would immediately suggest the probability of the existence of a congenital defect. During childhood, adolescence, and early adult life, rheumatic heart disease would predominantly occur. Among patients who are more than 40 years of age, we would expect to encounter syphilitic cardiovascular disease, hypertensive heart disease, coronary disease, adherent pericarditis, adiposity of the heart, and calcareous aortic stenosis.

The sex of the patient is an important consideration because certain forms of heart disease occur predominantly among one or the other sex. For example, rheumatic heart disease occurs more frequently among women, while syphilitic cardiovascular disease, coronary disease, and calcareous aortic stenosis occur with greatest frequency among men.

Inquiry regarding the causes of death of ancestors is important owing to the fact that a definite hereditary factor pervades the problem of the degenerative cardiovascular diseases.

Careful questioning regarding possible etiologic factors is always of extreme importance in arriving at the correct solution of the type of lesion.

Congenital heart disease not infrequently presents considerable diagnostic difficulty, and when the information is obtained that the patient was a "blue baby" and was resuscitated at birth with great difficulty, the correct diagnosis becomes apparent.

The admission of an infectious episode, which conforms to the requisites for the diagnosis of rheumatic fever or chorea, is almost conclusive evidence that the existing cardiopathy is of rheumatic origin. However, the failure to elicit a history of rheumatic fever does not preclude the existence of rheumatic heart disease because rheumatic fever may occur without involvement of the joints and under these conditions its true nature is rarely recognized.

*Read before the Sioux Valley Medical Association, Sioux Falls, South Dakota, January 22-23, 1935.

†Section on Cardiology, The Mayo Clinic.

The history of a prolonged, severe attack of retrosternal pain is frequently unmistakable evidence of a healed cardiac infarct, clearly pointing to the presence of coronary arterial disease.

The elicitation of a history of severe intrathoracic infection, such as pneumonia, empyema, influenzal and other forms of mediastinitis, may furnish incriminating evidence in the diagnosis of adherent pericarditis. The history of chancre is often extremely valuable evidence in the identification of cardiovascular syphilis.

These examples clearly emphasize the importance of careful histories regarding the occurrence of previous diseases.

The history next must elicit the symptoms, time of their onset, prevailing circumstances at their inception, and accurate description of the course of the illness up to the time that the patient comes for examination.

Dyspnea, cyanosis, edema of the dependent portions of the body, and accumulation of fluid in the cavities of the body constitute the well-known syndrome of congestive cardiac failure and are not characteristic of any particular form of heart disease. Likewise, dyspnea on excessive effort is common to many forms of heart disease. However, the history of momentary seizures of retrosternal pain on effort or excitement at once directs attention to disease of the coronary arteries. Paroxysmal dyspnea, especially when occurring at night, also focuses attention on the coronary arteries.

The history of recurrent ascites which is associated with dyspnea on effort, particularly when dependent edema is absent, would immediately suggest the presence of adherent pericarditis. The rather protracted duration of diffuse cyanosis, for example, would lead one to suspect the existence of congenital heart disease or the syndrome of Ayerza, which frequently accompanies sclerosis of the pulmonary artery.

The physical examination of the patient should not be limited to the chest but should comprise a complete examination of the entire body. Much can be learned from the general inspection of the patient, noting the behavior, appearance, manner of breathing, and so forth.

The facial appearance and color of the patient often present immediate clues as to the nature of the cardiopathy. The typical appearance of the facies of the patient who has heart disease is characterized by an anxious expression, by brightness of the eyes, often by fullness of the cheeks, and frequently by cyanosis of the lips. In cases of long-standing mitral stenosis, characteristic facies often consist of a cyanotic flush that exaggerates the malar eminences and on closer inspection, the skin capillaries are found to be dilated, giving the peculiar appearance that has been so aptly termed "the mitral butterfly."

In aortic disease a peculiar central pallor of the face is likely to occur; the color shades are augmented by the tendency for peripheral cyanosis to exist. Coronary thrombosis is likely to be associated with an ashen pallor of the face, and an anxious, restless expression, which results in an unnatural brightness of the eyes.

Careful observation regarding the character and type of the respiratory movements frequently offers important information. Not infrequently, the assertion of the patient that he becomes short of breath offers suggestive evidence of heart disease and at times forms the only conclusive evidence on which some physicians feel justified in making the diagnosis of heart disease. Careful questioning and the demand that the patient demonstrate the character of the breathing during the presumed periods of dyspnea frequently reveal the fact that dyspnea does not occur but that the individual merely experiences the feeling that a satisfying breath is not forthcoming. He then attempts to regulate respiration voluntarily by deeper breathing with succeeding inspirations until finally the feeling of a full breath is experienced. This constitutes the well-known syndrome of functional dyspnea and never indicates heart disease.

Engorgement of the veins of the neck and arms immediately suggests the fact that an increase in venous pressure exists, and is an important phenomenon in congestive heart failure. Inspection of the pulsations in the peripheral arteries may promptly reveal valuable facts regarding the type of lesion which is present, the character of the cardiac rhythm, and so forth. For instance, very active arterial pulsations, particularly those in which the wave drops rapidly, would at once suggest the presence of aortic insufficiency. The more common forms of arrhythmia, such as premature contractions and auricular fibrillation, are frequently recognized by the simple process of arterial inspection. Likewise, rapid, regular carotid pulsations, occurring two or three times as frequently as do those at the apex, virtually establish the presence of auricular flutter. The converse of this, namely, regular carotid pulsations of normal frequency, and a very slow apical rate, definitely demonstrates the existence of complete heart block.

Inspection of the hands and feet frequently yields important information pertinent to the diagnosis of heart disease. Clubbing of the fingers

and toes predominantly occurs when chronic passive congestion has existed for a considerable time, as in congenital heart disease and when interference in the pulmonary circulation exists as in pulmonary emphysema, extensive pulmonary fibrosis, and so forth. It is also observed in some cases of subacute bacterial endocarditis.

The careful scrutiny of visible pulsations, embracing not only the apex beat but also other pulsations of the thorax, abdomen, and so forth, often reveals evidence that is of utmost importance in the evaluation of the type of lesion. The normal apex beat, as frequently visible in cases in which the patients are thin or of normal weight, is a localized protrusion, which is synchronous with, and lasts through, systole, and which is observed in the fifth intercostal space within the imaginary midclavicular line.

When hypertrophy of the left ventricle occurs, the apex beat becomes forcible, is visible even in a patient who has a thick chest wall, is heaving in character throughout systole, and is displaced downward and outward. When cardiac tonus becomes diminished and dilatation supervenes, the impulse may become wavy, more diffuse, and less prominent. In hypertrophy of the right ventricle, the impulse travels upward and to the left, occurring perhaps in the fourth or even the third left intercostal space.

Careful inspection usually enables the clinician to distinguish between the visible apical impulse of hypertrophy and the systolic recessions of the interspaces which occur occasionally in adherent pericarditis. The latter are true recessions; they usually are observed in the left axillary and infrascapular regions and occur only when adhesive bands connect the pericardium with the chest wall or contiguous structures. These findings constitute the sign of Broadbent, a phenomenon which is rarely observed.

The demonstration and interpretation by palpation of adventitious impulses and thrills over various portions of the thorax frequently give helpful information in distinguishing lesions. The presence of a tracheal tug and a diastolic heave of the upper portion of the thorax are suggestive evidence of aortic aneurysm. A systolic shock and presystolic thrill at the apex leave little doubt regarding the presence of mitral stenosis, and the presence of a systolic thrill, situated over or near the aortic area, directs attention to aortic stenosis.

In the vast majority of instances the premise exists that an enlarged heart is a diseased heart and not infrequently the diagnosis rests solely on this determination. It thus becomes necessary for the physician to decide this question without hesitation or uncertainty. The art of physical diagnosis should be highly developed by all clinicians, even though mechanical aids are available, and in the majority of instances the size of the heart, as determined by palpation and percussion, should not vary more than one centimeter from that which is determined with the teleoroentgenogram.

The teleoroentgenogram gives the most accurate information regarding the size and the contour of the heart and is a record, on a plate or film, of the shadow of the heart and great vessels, which is cast by means of roentgen rays, when the tube is six to seven feet from the thoracic wall and the film in order to minimize distortion to the least possible degree.

In the interpretation of cardiac measurements, as determined by physical or roentgenographic methods, various factors concerning the individual patient must be judiciously appraised. The size of the normal heart varies according to age, sex, weight, height, and the build of the patient. Failure to appreciate these variables leads to diagnostic error.

Important facts may be determined by the careful study of heart sounds and the physician must be well aware of the normal heart sounds and their normal variations. Heart sounds that are distant, or that have lost their normal definition and distinguishing characteristics, may be early, and often subtle, evidence of serious cardiac disease.

The presence of cardiac murmurs is usually, but not always, proof of heart disease. The time is not far past when cardiologic teaching centered around murmurs; now, with a few exceptions, cardiac murmurs have been relegated to relative unimportance. Attention should be focused particularly on the diastolic murmur and its closely related presystolic murmur. The first is the characteristic murmur of aortic insufficiency and, under certain conditions, the murmur of mitral stenosis, while the presystolic murmur is positive proof of the presence of mitral stenosis.

The appraisal of systolic murmurs, particularly those occurring at the base of the heart and to the left of the sternum, must be carefully made because they often have little clinical significance. They may result from respiratory movements, increase in blood flow, and so forth, and may not indicate disease of the heart. Right basal systolic murmurs, especially when loud and widely transmitted, are virtually always indicative of disease of the aorta or the aortic valve. The same is true of apical systolic murmurs, especially when they completely replace the first sound and are transmitted into the axilla. When conditions are such

that an apical systolic murmur, or one located in the left basal area, is the only positive evidence that can be determined, the odds overwhelmingly militate against the presence of structural cardiac damage.

The identification of certain disturbances in rhythm at once discloses the existence of heart disease. For instance, the recognition of auricular fibrillation clearly establishes the presence of heart disease and while it may occur in any or all forms of cardiac disease, its outstandingly frequent presence in certain types would at once bring to mind mitral disease, hyperthyroidism, and hypertensive heart disease. The recognition of premature contractions or extrasystoles would in no manner establish the existence of structural cardiac changes as they occur with the same frequency in hearts that are structurally unimpaired.

The extreme bradycardia of complete heart block leaves no doubt regarding the existence of disease, while the rapid rhythm of paroxysmal tachycardia usually is evidence against the presence of demonstrable changes.

The value of roentgenography in the diagnosis of heart disease has already been mentioned. Frequently, other information regarding the cardiac outline, in addition to its size, may be determined by careful study. Alterations in contour permit the recognition of changes affecting the various chambers of the heart, such as undue prominence of either ventricle, or the auricles, or of the conus arteriosus and the aorta. Thus the hypertrophied ventricle of hypertension and of aortic stenosis reveals changes that are rather characteristic, while the dilated and hypertrophic left auricle in mitral stenosis may typically alter the silhouette so that the presence of this lesion may be determined at a glance.

The recognition of heart disease, and the identification of its type, is simple when the disease occurs in its classic form. However, the findings frequently may occur in a very unorthodox manner, more than one lesion may exist, and more than one etiologic process may participate in the production of the cardiopathy. Here, the problem of diagnosis may become extremely complicated and require the skillful use of all methods of detection.

The electrocardiograph has become a very important diagnostic adjunct and frequently serves as a most important aid in the identification of the true nature of the underlying disease. Electrocardiography has become a necessity in the final appraisal of the heart during middle and later life, particularly when the problem of coronary disease confronts the examiner. This fact becomes vividly apparent when we recall that disease of the coronary arteries may exist when little or no subjective or objective evidence of its existence can be detected. Not infrequently, the electrocardiogram reveals the first conclusive evidence of the existence of coronary disease. In many other situations, it is a refinement that irrevocably adds precision to the diagnosis and permits a more rational and detailed therapeutic approach to the problem at hand.

The philosophy of cardiac diagnosis in recent years has become broadened, yet at the same time simplified. It demands an unswerving desire for the truth in order that the error, which may be made today, clarifies the vision for a correct diagnosis tomorrow. It requires that the physician keep abreast with the times so that, if his opportunities for acquiring constructive experience are limited, he will make the effort to profit by the experience of others. Much of the progress that has been made in our knowledge of heart disease during recent years has resulted from the untiring efforts of certain workers to correlate the clinical signs and pathologic findings which are revealed by necropsy. By this means, some of the old, "stock-in-trade" diagnoses have been relegated and the clinician of today can no longer hide either indifference or ignorance under such vague and meaningless terms as chronic myocarditis, mitral insufficiency, and so forth.

For many years, and still to some extent today, the myocardial changes, which now are known to result from hypertension, coronary sclerosis, and hyperthyroidism, were identified under the general caption of chronic myocarditis. It is obvious what a retarding influence this attitude wrought in the clearer understanding of these diseases. Chronic myocarditis indicates chronic inflammation of the heart muscle, the result of the invasion of bacteria or the effect of their toxins. It is in reality a relatively rare condition and when the term is used in the absence of its orthodox requirements it is done presumptuously.

The presence of an apical systolic murmur, likewise, does not justify the diagnosis of mitral insufficiency. Insufficiency of the mitral valve may result from several causes and their differentiation is of utmost importance in the intelligent interpretation of the cardiopathy and its proper managament. It must be emphasized that the apical systolic murmur may not indicate mitral insufficiency. Endocardial valvular disease is, of course, the outstanding cause of mitral insufficiency but occurs predominantly in conjunction with stenosis. Pure mitral insufficiency of endocardial origin is a rare condition among adults but

is common among children as it usually precedes demonstrable evidences of stenosis. Mitral insufficiency, independent of structural valvular changes, may result from stretching of the orifice, as observed in greatly hypertrophied and dilated hearts, from many causes. Likewise, sclerotic changes in the leaflets consequent to atherosclerotic processes may cause sufficient retraction to permit varying degrees of valvular insufficiency to occur.

It is a well-known fact that patients, who have heart disease, frequently present symptoms referable to the abdomen. This is particularly true when congestive failure is present, and pain and discomfort from visceral congestion and ascites may occur. Also, in coronary disease, such symptoms as pain, flatulence, and so forth, may chiefly direct the symptoms to the abdomen. The physician, however, must not be misled by merely presuming this apparent cause and effect. It is usually necessary, when the cardiac status of the patient has sufficiently improved to permit more complete examination, that this be judiciously carried out. I can cite numerous instances in which, in addition to well marked heart disease, the presence of such diseases as cholelithiasis, duodenal ulcer, gastric ulcer, carcinoma of the stomach and colon, and in two recent cases, primary carcinoma of the lung, were found. These facts, again vividly emphasize the necessity and importance of complete and thorough examination.

Thus, cardiac diagnosis comprises the complete appraisal of the entire body, both positive and negative findings being judiciously appraised, and through eliminative deduction the final solution to the problem is attained.

FOURTH ANNUAL REPORT OF THE TUBERCULOSIS COMMITTEE AMERICAN STUDENT HEALTH ASSOCIATION

Fifteenth Annual Meeting

Hotel Pennsylvania, New York, December 27-28, 1934

THIS report is the fourth which your Tuberculosis Committee has made to the American Student Health Association and covers the school year 1933-34. Much progress has been made in this time but we can only review here the principal features of the work and continue the compilation of statistics on tuberculosis and tuberculin testing which was started in 1932-33.

The committee has been much strengthened by the addition of Dr. Harry D. Lees, director of the Health Service at the University of Pennsylvania, and by the addition to its advisory group of Dr. Esmond R. Long, of the Phipps Institute, Philadelphia. Both of these men have had an active interest in tuberculosis work for many years and their co-operation and advice has already proven most helpful.

As in previous years the committee with the advisory group gave a luncheon at the annual meeting of the National Tuberculosis Association in Cincinnati, May 14-17, 1934. This was held on May 15th, at the Netherland Plaza Hotel. Over forty were in attendance and the various problems concerning tuberculosis in students were freely discussed. The interest was so great that it seems probable this meeting will be made a regular annual event and used to encourage uniform methods in tuberculosis work at the institutions in various parts of the country.

Perhaps one of the best indicators of the interest in tuberculosis in students is found in the number of papers read on this subject before various groups during the past year. The committee has ten of these papers listed below. No doubt there are many more. Our aim will be to encourage the discussion of this subject at the annual meetings of the National and State Tuberculosis Associations; also, at the annual and sectional meetings of the American Student Health Association and allied groups. This seems to be our best means for stimulating interest and disseminating knowledge on this phase of tuberculosis work. The papers referred to are:

Fourteenth Annual Meeting, American Student Health Association, Chicago, December 28-29, 1933:

"Treatment of Tuberculous Students," J. A. Myers, M.D.

Third Annual Meeting, Indiana Student Health Association, Terre Haute, Ind., January 20, 1934:

"Diagnosis and Treatment of Tuberculosis in College Students," Lee H. Ferguson, M.D.

Tenth Annual Meeting, Ohio Student Health Association, Columbus, Ohio, April 6, 1934:

"Tuberculosis in College Students," Lee H. Ferguson, M.D.

Thirty-ninth Annual Meeting, American Physical Education Association, Cleveland, Ohio, April 18-21, 1934:

"Tuberculosis and Physical Activity," Lee H. Ferguson, M.D.

Second Annual Meeting, Pennsylvania-New Jersey Section of American Student Health Association, New Brunswick, N. J., May 5, 1934:

"The Value of a Comprehensive Program for the Detection of Tuberculosis in a University Group," Harry D. Lees, M.D.

Thirtieth Annual Meeting, National Tuberculosis Association, Cincinnati, Ohio, May 14-17, 1934:

"Sex as a Factor in Tuberculosis in College Students," Lee H. Ferguson, M.D.

Fourth Annual Meeting, New York State Student Health Association, Rochester, N. Y., May 18, 1934:

"Early Tuberculosis Case Finding at Cornell University," Edward C. Showacre, M.D.

Seventh Annual Meeting, American Association of School Physicians, Saratoga Springs, N. Y., June 25-27, 1934:

"Correlation of Tuberculosis Programs in High School and College," Lee H. Ferguson, M.D.

"The Advantages of a Standard Tuberculin in School Service," Esmond R. Long, M.D.

Second Annual Meeting, Pacific Coast Section of the American Student Health Association, Stanford University, California, December 1, 1934:

"Tuberculosis in College Students," Panel Discussion led by C. E. Shepard, M.D.

One of the advances which has been made this year is in the tuberculosis work at the Negro schools in the South. Hampton Institute, Hampton, Virginia, seems to be a leader in this and a definite tuberculosis program has been set up by Dr. Charles W. Scott. This program was described by him in the October, 1934, issue of "The Southern Workman," published by Hampton Institute, and in the same issue there was also a fine editorial on the value of the Health Service to college students. Both of these articles were most constructive and should help to encourage more active health work at other institutions. We understand that a program similar to the one at Hampton is contemplated at Virginia State College for Negroes, Petersburg, Virginia, under the direction of Dr. E. G. Trigg.

Just how serious the problem of tuberculosis at Negro schools may be can be judged from the figures for 1933-34 from Hampton Institute. Of 131 men given the tuberculin test, 78, or 59.6 per cent, were positive; and of 135 women tested, 81, or 60 per cent were positive. As the average of positives for all students in the country is only about 30 per cent, it would seem that we have an especially serious problem in our Negro schools.

In this connection we are happy to report that the National Health Council has a Negro worker, Mr. Franklin O. Nichols, who has been visiting Negro colleges and normal schools in the interest of health education and health service. Dr. H. E. Kleinschmidt, of the National Tuberculosis Association, is chairman of the committee under which this work is being done, and advises us that Mr. Nichols "is doing the best he can to help the college physicians and teachers in formulating their health and tuberculosis programs." This is very encouraging and it is to be hoped that eventually some agency such as the Julius Rosenwald Foundation, will become actively interested in the health work in Negro schools so it can go forward more rapidly.

Next we should like to report on a very constructive piece of tuberculosis work done in the normal schools of New York State under the direction of Dr. William Paul Brown, of the State Education Department. In 1933-34, a program of tuberculin testing and X-raying was carried out in ten schools—2,430 students were tested, showing 36 per cent positives. Of 1,875 X-rays taken, 10 showed active tuberculosis and 120 were suspicious. The difficulty of carrying out such a program in widely scattered schools is obvious and the committee feels that Dr. Brown deserves a great deal of credit for it. We are hoping that what he has accomplished in New York State will encourage other states to go ahead with a more active tuberculosis program in their normal schools. This will not only insure a healthy teaching personnel but will also be a valuable educational feature on tuberculosis in the normal school curriculum.

In passing, it ought to be mentioned that Dr. Brown required all of his positive reactors to name a doctor in their local community to whom a report could be sent. In this way possible sources of infection in families and friends would be located and the family doctors directly linked with the entire program. This feature we regard as extremely important and one which we should constantly keep in mind in all our health service work. More and more we are coming to realize that the family doctor must be an integral part of all our work in health education and preventive medicine.

A third valuable contribution to our tuberculosis program in students in 1933-34 has been the development and placing on the market of the Purified Protein Derivative Tuberculin developed by Dr. Esmond R. Long and Dr. Florence Seibert. This product is being used at several institutions at the present time and should simplify and standardize tuberculin testing to a marked degree.

The cost is the only obstacle in the way of its universal adoption at the present time and this should be removed as the demand increases.

As in previous reports, we should like again to call attention to the valuable assistance which the National Tuberculosis Association is giving to our student health work. Both Dr. Kleinschmidt and Miss Strachan have kept us informed about the work at various institutions over the country and have been most helpful in their suggestions to us. Their entire organization regards tuberculosis work as only a part of a general health program and this accounts for their broad interest in the subject.

We have not forgotten the help which the State Tuberculosis Associations gave in Indiana and Pennsylvania in getting these sections of the American Student Health Association organized. There are at present some indications that they will be able to help with the sectional groups in Texas and also in the Northwest. The outlook in Texas is especially bright. A meeting of this section was held in the fall of 1934 and its organization is well under way. As practically no tuberculosis work is being done at present in the colleges of the state, we are hoping for rapid progress in its development.

Before giving the statistics collected for the year 1933-34 on tuberculosis and tuberculin testing, we ought to explain the grouping of the institutions from which reports have been received. In Group I, we have placed all institutions having an active health service and an active tuberculosis program. In Group II, we have placed those institutions which have health services but no well developed tuberculosis program. If a school is just starting an active tuberculosis program, as soon as it can quality we will move it up into Group I. Our hope is to show each year an increasing number in this group. In Group III, we have put all institutions furnishing statistics on tuberculin testing only.

Probably the figures from Group I, for 1933-34, are the most accurate available at the present time on the incidence of tuberculosis in college students. The fourteen institutions represented were:

Agnes Scott College, Ball State Teachers College, Muncie, Ind.; University of California, Cornell University, Iowa State College, University of Kansas, University of Michigan, University of Minnesota, University of Pennsylvania, University of North Carolina (Chapel Hill), Stanford University, Western Reserve University, University of Wisconsin, and Yale University.

On account of their wide geographical distribution, the average of the figures from these institutions should represent a fair average for the country.

For 1933-34, the committee had reports in Group I, on 71,611 college students, 49,721 men and 21,890 women. The group showed 426 cases of adult type pulmonary tuberculosis, or .59 per cent; the men, 279 cases, or .56 per cent; the women, 147 cases, or .67 per cent. In Group II were five institutions without a tuberculosis program or else just starting one. In a total of 13,707 students only nineteen cases, .14 per cent were found. That is, over four times as much tuberculosis was found in Group I as in Group II.

The case finding methods used at the various institutions are not sufficiently uniform at present to warrant any comparison between them in regard to the incidence of tuberculosis. It is doubtful if any one institution is finding all the tuberculosis present in its student body. Of the fourteen institutions reporting in Group I, the incidence varied from two cases per thousand to thirteen cases. The average for the entire group was 5.9 cases per thousand.

Reports on tuberculin testing for 1933-34 came from 38 institutions. A total of 25,184 students were tested with 7,648 positives, or 30.3 per cent. Of 12,653 men tested, 3,835 were positive, or 30.3 per cent. Of 8,145 women tested, 2,158 were positive, or 26.4 per cent.

The five schools with the lowest percentages of positive tuberculin tests were as follows:

9.6%—Southern University of Idaho, Pocatello, Idaho.
12. %—Iowa State College, Ames, Iowa.
12.5%—Idaho State Normal School, Lewiston, Idaho.
16.2%—Ball State Teachers College, Muncie, Ind.
16.6%—Plattsburg Normal School, Plattsburg, N. Y.

COMPARATIVE STATISTICS

GROUP I

	1932-1933			1933-1934		
	Number of Schools, 7			Number of Schools, 14		
	No. Students	Tuberculosis Cases	Percent	No. Students	Tuberculosis Cases	Percent
Men	28,091	180	.64%	49,721	279	.56%
Women	10,841	82	.75%	21,890	147	.67%
Total	38,932	262	.67%	71,611	426	.59%

GROUP II

	Number of Schools, 4			Number of Schools, 5		
Men	9,290	7	.07%	8,116	10	.12%
Women	6,084	4	.06%	5,591	9	.16%
Total	15,374	11	.07%	13,707	19	.14%

TUBERCULIN TESTING

	1932-1933			1933-1934		
	Number of Schools, 12			Number of Schools, 38		
	No. Tested	No. Positive	Percent	No. Tested	No. Positive	Percent
Total — Men and Women not separated	14,318	5,075	35%	25,184	7,648	30.3%
Including—						
Men	6,959	2,442	35%	12,653	3,835	30.3%
Women	4,508	1,244	27%	8,145	2,158	26.4%

The five schools with the highest percentages were:

59.7%—Hampton Institute (Negro), Hampton, Va.
50.8%—Penn State College.
50.8%—Oklahoma City University, Medical School.
49. %—New Paltz Normal School, New Paltz, N. Y.
48. %—University of Pennsylvania.

In general the analysis seems to show that the percentages of positive tuberculin tests are highest in the eastern section of the country, next highest on the Pacific Coast and lowest in the middle west.

The comparative statistics for tuberculosis and tuberculin testing collected by the committee for 1932-1933 and 1933-1934 are appended to this report.

As the statistics in Group I, for the two years show approximately six cases of tuberculosis per 1,000 students, it might be worth while to consider some of the implications they carry. If there are one million students of college grade in the United States, then there are six thousand students with tuberculosis. If on the average they spend one year in a sanatorium at $1,000 per year, then their total cost would be $6,000,000 per year. If a year lost is worth at least $2,000, then we must add $12,000,000 more, or a total of $18,000,000 per year as the cost of tuberculosis in college students. At best it is not probable that we are finding more than two-thirds of the cases at the present time so we would probably be safe in estimating that tuberculosis in college students is costing the country at least $27,000,000 a year. When we consider it is largely from the college group that the leaders of tomorrow are to be recruited, it would seem that educators could well afford to take an active interest in this problem.

In closing, this year especially, the Tuberculosis Committee feels most grateful to the members of this association for their loyal support and co-operation. To compile statistics from such widely scattered sources would have been manifestly impossible without your help. We appreciate all you have done to make this report a success.

Respectfully submitted,

Lee H. Ferguson, M.D., *Chairman*,
Western Reserve University,
Cleveland, Ohio.

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Minneapolis, Minn.

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Henry D. Chadwick, M.D., Commissioner of Health, State of Massachusetts, Boston, Mass.

Esmond R. Long, M.D., Henry Phipps Institute, University of Pennsylvania, Philadelphia, Pa.

BOOK NOTICE

A SPECIALIZED FIELD IN DERMATOLOGY

Fungus Diseases, by HARRY P. JACOBSON, M.D., with introductions by J. FRANK SCHAMBERG, M.D., and HOWARD MORROW, M.D.; cloth, 308 pages, 153 illustrations and 7 tables: Springfield, Illinois, and Baltimore, Md.: Charles C. Thomas: 1932. Price, $5.50.

This work, usually considered a standard reference book to the fungus diseases as encountered in dermatology, has an additional advantage in that full attention is given to mycological laboratory technique and morphological descriptions as applied to diagnosis. This makes it especially valuable to the practitioner who wishes concrete application of diagnostic methods as well as clear indications and differentials for each fungus condition which he may encounter.

The volume consists of three parts: (1) primary cutaneous mycosis with (usually) no definite systematic involvement, (2) primary cutaneous and/or mucous membrane infections with frequent systematic involvement, and (3) primary systemic infections with occasional instances of skin or mucous membrane involvements. There is an index, and each chapter has its own bibliography.

Splendidly illustrated and smoothly-written, this work would be of considerable value to any dermatologist or general practitioner.

The
JOURNAL LANCET

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The Official Journal of the

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South Dakota State Medical Association
Montana State Medical Association
The Hennepin County Medical Society
The Minnesota Academy of Medicine
The Sioux Valley Medical Association
Great Northern Railway Surgeons' Assn.
American Student Health Association
Minneapolis Clinical Club

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MINNEAPOLIS, MINN., JUNE 1, 1935

A MEMORABLE EVENT

When plans for the eighty-second annual meeting of the Minnesota State Medical Association, to be held in Minneapolis on June 24 and 25, began to be developed, it was early seen that there was a unique opportunity to make it the largest and most noteworthy of any meeting of the kind ever held in the state. Not only was the time ripe for a big medical gathering in Minneapolis but the fortunate circumstances of being able to join forces with the Medical Section of another important organization: the American Association for the Advancement of Science added strength to the possibilities and now that the program is completed and available for publication it can be plainly seen that the most sanguine expectations of those who have had the planning and the preparation of this meeting have been realized in the fullest degree. Never before has the State Association ever been able to offer so comprehensive and so interesting a program in its history. Not only have the officers of the State Association exerted every effort to bring this about but they have met with the warmest co-operation of the committees from the Hennepin County Medical Society in perfecting the local arrangements for the accommodation of all the meetings and the various exhibits and arranging for the comfort and convenience of the visitors. The program speaks for itself and, as will be readily seen, it has been planned with a view to meeting the requirements and pleasing the tastes of the largest possible number of those in attendance. The needs of the general practitioner have especially been considered, for he has the most ground to cover in his work and represents the largest proportion of every audience. The practical demonstrations which will be given by experienced men in various new fields of activity will be found very useful and well presented, for they are all in the hands of trained men who have given much attention to their various subjects. The scientific exhibit will be well worthy of time spent there, for it has been most carefully chosen and covers a wide variety of well prepared offerings. The commercial exhibit is larger than usual, for the response to the opportunity offered was eagerly grasped by an unusual number of reputable firms and it is this fine representation of people handling all sorts of fixtures and supplies used by the medical profession that has helped to make this meeting an outstanding success and their exhibits should receive all possible attention. The Hobby Show is something new for us and will undoubtedly attract a good deal of interest. What doctors do in their spare time and what they are interested in outside of their profession covers a good deal of ground and it will be surprising to see how proficient they become in various non-professional ways.

When the Editorial Board and the publishers of THE JOURNAL-LANCET became aware of the

magnitude of the plans for this meeting and the opportunities offered for the whole medical profession in this section of the Middle West to benefit thereby it was at once voted to get out a special number to carry the word especially to those practicing outside of the State of Minnesota and thereby not on the regular mailing list of the State Society, to enable them to learn all the details and to make them know that they will be most heartily welcomed if they come to Minneapolis for this meeting. THE JOURNAL-LANCET, therefore, acts as a messenger of good cheer to its friends in North and South Dakota, Montana, Iowa and other states where it circulates and assures any who may avail themselves of the opportunity to spend a few days most profitably in Minneapolis that they will be well repaid for doing so. What is virtually a three-day post-graduate course with all accessories is at hand for those who desire to use it.

The local committees, as set forth in the program, are all on the job and will be glad to be of any service to those wanting accommodations. The hotel facilities are ample and conveniently accessible to the place of meeting and all matters of reservations or anything else pertaining to accommodations will receive prompt and capable attention if brought to the attention of the appropriate committee. A large crowd is expected and there will be many pleasant reunions. Send word ahead if you can, bring your family and friends if you wish and be assured of an agreeable and profitable outing. G. C.

SCARLET FEVER IMMUNIZATION

The current prevalence of scarlet fever has raised many questions concerning the practicability of scarlet fever immunization. Although considered a recent development, scarlet fever toxin was used for immunization almost thirty years ago by Gabritchewsky of Russia. He found that approximately 15 per cent of the children to whom he gave this toxin developed a sore throat, rash, and "strawberry tongue" typical of scarlet fever; and that the children in certain Russian villages to whom he administered this toxin seemed to become immune to scarlet fever. His untimely death unfortunately prevented the conclusion of this work, which subsequently has been shown to have been entirely sound. Several decades later Drs. George and Gladys Dick, of Chicago, demonstrated conclusively that scarlet fever is caused by a toxin-producing streptococcus, that this toxin can be used to determine whether an individual is susceptible or immune to scarlet fever, that it will stimulate the development of immunity in those who are susceptible, and that against it an anti-toxin can be developed which is useful for treatment and for passive immunization.

A certain proportion of individuals become immune to scarlet fever as a result of natural exposure. Consequently, before undertaking immunization individual susceptibility should be determined by means of the Dick test. In performing this test one skin test dose of the toxin, exactly 0.1 cc., is injected intradermally on the flexor surface of the forearm at the junction of the upper and middle third. The reaction should be observed in a bright light 20 to 24 hours later. Observations later than this are not reliable. The slightest flush or reddening, 10 mm. or more in diameter, no matter how faint in color, constitutes a positive reaction, and indicates susceptibility to scarlet fever. The reliability of this test has been established, in spite of the fact that an occasional individual who is adjudged immune develops scarlet fever. This apparent inconsistency is explained by an improper technique in the application of the test, by an error in its interpretation, by infection with a strain of streptococcus to which the individual is not immune, by a loss of immunity subsequent to the test, or by an overwhelming dose of infection. Among the more common sources of error in the performance of the test are: Inaccurate dosage due to inadequate syringes or needles or to an estimation of the amount to be injected by the size of wheal instead of accurate measurements by the graduations on the syringe; subcutaneous instead of intracutaneous injection; dilution of the toxin with water left in the syringes or needles after boiling; sterilization of the syringes in alkaline tap water instead of distilled water; sterilization of the syringes or needles in alcohol with precipitation of the toxin; failure to observe the reaction between 20 and 24 hours after the test is made; and the reading of slightly positive reactions as negative.

Active immunization, or so-called vaccination, against scarlet fever consists of the administration of scarlet fever toxin in five graduated doses, beginning with 500 skin test doses for the first injection, and increasing to 80,000 for the last. This series of injections leads to the immunization of approximately 90 per cent of individuals. As with other vaccinations it is easier to immunize children than adults. Two weeks after the last dose another Dick test is made, using 0.1 cc. of toxin on one arm and 0.2 cc., or two skin test doses, on the other arm. If either is positive, the fifth dose of toxin should be repeated. Unless im-

munization is carried to the point of a negative skin test, complete protection cannot be expected.

The duration of the immunity thus obtained has not yet been accurately determined but there is reason to believe that a considerable degree of protection persists for some years. The Dicks report that approximately 90 per cent of persons immunized are still immune at the end of four to five years. Statistics of tests made at longer intervals following immunization are not yet available. In a series of several hundred nurses at the University of Minnesota three per cent had become "Dick positive" two or three years after immunization.

Maximum immunity is developed two to three weeks after the last injection. Consequently, it is sometimes suggested that immunizations should not be attempted when scarlet fever is prevalent in the community. This, however, is not sound reasoning, for immunity begins to develop after the first dose of toxin and increases with each subsequent injection. Several instances in which this toxin has been used in the course of an epidemic suggest that most persons develop a sufficient degree of immunity after three doses to protect them against average exposure. Furthermore, there is no evidence that persons who contract scarlet fever during the course of immunization are any the worse for having had several injections of toxin.

Local or constitutional reactions follow approximately ten per cent of the injections. Some individuals get no reactions at all, some react to one injection, and still others to several injections in the series. Local reactions consist of swelling, induration and soreness; and constitutional reactions of malaise, fever, rash, nausea, vomiting and diarrhea. Such reactions may follow any of the injections but are most common after the first or second one. Most reactions are mild but occasionally one occurs which is severe enough to be alarming. There has, however, never been a fatality or any ill effects reported from the use of a toxin. Two or three minims of adrenalin administered with the immunizing dose decrease the frequency of allergic reactions from sensitivity to the broth.

Efforts are being made to develop a scarlet fever toxoid which like diphtheria toxoid will confer immunity and yet be relatively non-toxic. This work, however, is as yet in an experimental stage.

That immunity is developed as a result of this immunization procedure has been established beyond any reasonable doubt. The only question is: Under what conditions is this protection necessary? Certainly nurses, medical students, and internes, who will be exposed to scarlet fever, should be protected. And children constitute a susceptible group who are likely to be exposed to infection. Records show that between 20 and 25 per cent of students who enter the University of Minnesota have had scarlet fever. This is a hazard to life and health which they might well be spared. Adults are less susceptible and less frequently exposed, consequently are less in need of protection.

H. S. D.

MEMORIAL

The Faculty of the Medical School of the University of Minnesota hereby expresses its sense of loss in the death of Arthur T. Mann, Associate Professor of Surgery, and to his family its deep sympathy.

For thirty-five years Dr. Mann has been a valued and distinguished member of the surgical staff. As a young man his excellent preparation in the best clinical schools enabled him to bring to this institution the latest developments in the field of surgery. At this period he gave himself without stint or compensation to the development of our clinical teaching for which his natural ability as a teacher and his special training in the newest methods especially fitted him. As a later period he has continued as lecturer, examiner and councellor to exercise an important influence in both under graduate and graduate teaching in the valuable capacity of part time professor. He has been a conspicuous example among those who, though primarily engaged in the practice of medicine, have continued throughout life as active teachers and have brought to the Medical School the always needed contact with active practice. We record gratefully his important services and note especially the fine spirit in which they were rendered.

Richard E. Scammon,
Dean of Medical Sciences.

E. P. Lyon,
Dean of the Medical School.

Owen A. Wangensteen,
Head of the Department of Surgery.

SOCIETIES

Great Northern Railway Surgeons' Association will hold the 1935 meeting at Many Glacier Hotel, Glacier Park, Mont., Monday and Tuesday, July 1 and 2. Dr. Douglas Corsan of Fernie, B. C., is President of the Association. The program for the meeting will be as follows:

Monday, July 1
9:00 A. M.

"The Emergency Treatment of Fractures"
Moving pictures made under the direction of Dr. Charles L. Scudder, Massachusetts General Hospital, Boston, Mass.

"The Treatment of Spinal Cord Injuries"
Dr. Loyal Davis, Professor of Surgery, Northwestern University Medical School, Chicago.

"Fracture of the Surgical Neck of the Humerus"
Dr. F. J. Savage, St. Paul.

"The Treatment of Injuries of the Hand"
Dr. Sumner L. Koch, Associate Professor of Surgery, Northwestern University Medical School, Chicago.

"The Management of the Diabetic Railway Employee"
Dr. A. E. Cardle, Director of the Diabetic Out-Patient Clinic, Minneapolis General Hospital, Minneapolis.

"Malpractice Suits"
Dr. B. J. Branton, Willmar, Minn.

Tuesday, July 2
9:00 A. M.

"Alleged Sacroiliac Strains"
Dr. L. J. Stauffer, Priest River, Idaho.

"Some Aspects of Major Infections of the Hand"
Dr. Sumner L. Koch, Chicago.

"Traumatic Detachment of the Retina"
(With motion pictures.) Dr. Charles N. Spratt, Minneapolis.

"Dislocations of the Knee Joint; Report of Two Cases"
Dr. R. B. Richardson, Great Falls, Mont.

"Septic Arthritis of the Knee Joint"
Dr. John G. Cunningham, Spokane, Wash.

"Trauma and the Malignant Testis"
Dr. A. N. Collins, Duluth, Minn.

MINNEAPOLIS SURGICAL SOCIETY

ANNUAL SYMPOSIUM ON MALIGNANCY

Held in the Hennepin County Medical Society Auditorium, Thursday, April 4, 1935

8:00 P. M.

I. Dr. Martin Nordland, *President:* Announcements and Introduction of Cancer Committee Chairman.

II. Dr. Kenneth Bulkley, *Chairman:* Introductory Remarks.

III. Dr. S. H. Baxter: "Melanoma."

IV. Dr. Martin Nordland: "Malignancy of the Thyroid." Discussion by Dr. C. R. Drake (by invitation).

V. Dr. Theo. Sweetser: "Malignancy of the Urinary Tract."

VI. Dr. F. A. Olson: "Organization of Hospital Service for Diagnosis and Treatment of Malignancy."

VII. Dr. S. R. Maxeiner: "Carcinoma of the Stomach."

VIII. Dr. J. A. Johnson: "Treatment of Carcinoma of the Rectum by Cautery in Patients of Advanced Age and Other Poor Surgical Risks."

IX. General Discussion.

F. A. Olson, M.D.,
Secretary.

Dr. Martin Nordland, *President:* Before introducing the chairman in charge of the meeting tonight, I want to make a few remarks with reference to the purpose of the Minneapolis Surgical Society devoting one meeting each year to the subject of cancer.

It is the plan of the State Committee on Cancer to encourage every medical organization in the state to hold at least one meeting each year for the discussion of the problem of malignancy.

The object of this plan is to impress upon the medical practitioner and indirectly upon the public the fact that cancer is curable by the use of well-known and established methods of treatment; to point out in a convincing manner that if all cases of cancer could be diagnosed early and treated promptly in their incipiency, the annual death rate from the disease, now recorded as 150,000 in the United States and Canada, would be reduced by 33 per cent, or 50,000 per year. It has been stated that the average patient with car-

cinoma has delayed consultation with his physician seven months after suggestive symptoms have developed and that the physician has on the average delayed two months before beginning treatment. Further, to convince the profession and the public that even though cancer is already apparently in the later stages, if subjected to proper treatment the palliative measures would bring relief of distressing symptoms, its progress often stayed and the cancer might frequently be cured, and lastly, to discourage the cancer phobia that now exists in the minds of the profession and public and establish that cancer is curable.

Dr. Bulkley, past president, has worked on this program; he has spent a good deal of time arranging it, and will conduct the meeting and call on the speakers in their turn. It is my pleasure now to turn the meeting over to Dr. Bulkley, chairman for the evening.

Dr. Kenneth Bulkley, *Chairman:* Mr. President, members of the Surgical Society, and guests. I regret that the weather tonight is so inclement, as it has had an effect of markedly reducing our attendance. May I take this opportunity first of stating that the Minneapolis Surgical Society meets on the first Thursday of each month during the winter in the lounge of the Hennepin County Medical Society, and that these meetings are open to the medical profession. We try to start promptly at 8:00 p. m., and adjourn at 10:00 p. m. The courtesy of the floor is commonly extended to visitors who may wish to discuss any of the cases or papers presented.

It has been the custom of the Surgical Society, since it was founded, to have two standing committees, one of which is made responsible for an annual meeting on fractures and the other made responsible for an annual meeting on malignancy. Last year I happened to be the presiding officer, and Dr. J. F. Corbett served in the position in which I find myself this evening. A year ago our meeting on malignancy was largely statistical and informative in character. We showed then quite conclusively that the majority of cases of malignancy in Minneapolis were not cared for by public institutions but were cared for by the general run of practitioners. Consequently, the meeting was devoted chiefly to the occurrence of cancer in private practice in Minneapolis and the available means of treatment.

This year we have somewhat revised our program and will present to you a series of individual papers on various aspects of the cancer problem. These papers have all been contributed by members of this Society and every member was given an opportunity to submit a title. From this list of titles your program committee selected the papers which will be presented tonight.

I shall now call on Dr. Baxter, our first speaker of the evening.

MELANOMA

S. H. Baxter, M.D.
Minneapolis

The study of cancer reveals numerous instances illustrating the contradictory behavior in different individuals of tumors which, by all the tests now at our command, are almost exactly alike. This has been a frequent observation, and probably indicates that there is some difference in the individuals harboring these tumors which is too profound to be explained by the mere differences in the morphology of the tumors.

To illustrate this point, and to preface a brief discussion of melanomas, two cases are cited:

Case 1—Mrs. Z., aged 35, came to Hill Crest Hospital in October, 1920. About six months previously she had noticed a small growth in the skin of the left side of the neck. It seemed to be under the skin, there were no subjective symptoms, and the patient paid no attention to it until it began to grow. It was removed elsewhere in August, 1920, and was pronounced a "Carcinoma which looked something like a melano-epithelioma." Several treatments were given with X-rays. About two months later a lymphatic gland in the left side of the neck began to enlarge. This gland was removed by operation and a radium capsule left in the wound. This tissue showed the effect of the X-ray treatments, but contained groups of carcinoma cells. Within a few weeks another lympth gland deep in the neck began to enlarge, and in March, 1921, a tumor the size of a small hen's egg was removed from beneath the left sterno-mastoid muscle. It was readily separated from the carotid sheath but was intimately attached to the sterno-mastoid muscle, so that it was necessary to excise a part of the muscle with the tumor. A radium capsule was buried in the wound. The microscopic sections of this tumor showed a malignant melanoma with mitotic figures in some of the cells. There has been no recurrence and the patient is now living and well.

Case 2—Mrs. R., aged 30. In 1919 a mole was removed from the left side of the vulva between the labia. In May, 1920, the patient noticed a swelling in the left groin, which her physician regarded as an enlarged gland from an infected toe. In January, 1921, this gland was excised with a

wide margin of the surrounding tissue and ninety mgm. of radium were left in the wound. Sections of the original tumor were then examined by different pathologists who gave varied opinions regarding its nature, Dr. Ewing expressing the opinion that it was definitely malignant. A generalized melanosis soon developed, and death ensued in a few months.

It is impossible, in the present state of our knowledge to explain why these two cases, of apparently equal degree of malignancy, should behave so differently. In this difference in behavior, possibly, lies the key to the solution of the cancer problem. "The variations in pigment offer a very delicate indication of the functional activity of the cells and a unique opportunity to trace the relation between functional activity and the growth capacity of the tumor cells."—*Ewing*.

Melanin is found very extensively in nature both in plants and in animals. It is autochthonous in the tissues in which it is found, being elaborated by the cells themselves through the action of an enzyme. It is not produced from blood pigment or hemoglobin or any other pigment brought to the cells by the circulating media, but its elaboration is a specific function of certain cells. In the vegetable kingdom a familiar example of the production of this pigment is found in the brown discoloration of the cut surface of an apple, which is the result of the action of an oxydase upon the chromogen in the cells. The juices of certain Japanese plants are changed by a similar process into the black dye that is used in lacquer.

A striking example among invertebrate animals is found in the ink-sac of the cuttlefish. The black pigment produced by some fungi, e.g., the inky-cap mushroom, is similar in origin and in composition to that produced in melanotic tumors. In the horse a condition is found which has not been observed in man, that of a diffuse melanosis, and, strange to say, it affects only white or grey horses, not dark-colored ones. The pigment in the skin of the chameleon is controlled in a most extraordinary manner, to enable the animal to change its color to lighter or darker shades according to the color of its surroundings. The pigment granules are found in the branched cells of the corium of the skin. These cells are under nervous control and when the granules are scattered throughout the cells, the skin is dark: When they are concentrated in the center of the cell, the skin is light-colored. This nervous mechanism is probably not volitional, but sympathetic or automatic, and is set in motion by various external stimuli and possibly by the action of light on the retina.

Melanin, therefore, and melanin-forming cells are found normally throughout all living tissues, both vegetable and animal and the absence of it, as in albinism, may constitute an abnormality. All degrees of variation in pigmentation are found in normal tissues under various conditions. The bathing beaches in summer offer striking examples of the effect of sunlight in stimulating the deposit of melanin in the skin. There is a physiologic increase in pigmentation in pregnant women —chloasma uterinum—which is most marked in the areolae of the breasts, but affects other areas of the skin also. This effect is most marked in brunettes. Some cases of exophthalmic goitre show a similar increase in the pigmentation of the skin.

In the fetus of both dark-skinned and white-skinned races, the basal cells of the Malpighiian layer contain pigment. In the white races, most of these cells become depigmented by disuse, but some cells remain as potential melanoblasts which manifest themselves in the form of freckles or bronzing of the skin under the influence of actinic light rays.

Melanin is assumed to be preceded by a colorless substance, melanogen or chromogen, a protein body which is closely related to tyrosin and which, by the action of an enzyme in the adrenal gland is converted into adrenalin. This melanogen, or mother-substance, may also be converted into melanin or brown pigment by the action of the specific ferment or oxydase which is produced by the melanoblasts in the Malpighiian layer of the skin. When there is absence of the enzyme in the melanoblast, then no melanin is formed from the colorless mother-substance, and we have the condition of albinism. On the other hand, in Addison's disease, it is presumed that the disease of the adrenal prevents the normal conversion of the mother-substance or melanogen into adrenalin, so that there is an excess of this substance in the circulation and it is converted into melanin by the specific ferment in the melanoblasts of the skin. Under conditions of disease, the production of melanin is enormously increased. It has been estimated that there is only about one gram of melanin in the entire skin of a Negro, but three hundred grams have been extracted from a melanotic tumor of the liver.

The consideration of the origin and structure of melanomas would take us into a field of speculation which is beyond the scope of this discussion. Whether melano-carcinoma, melano-sarcoma, melano-endothelioma, etc., have a common origin in the germinal layer of the skin, or whether they have varied origins is a question on which

there is much disagreement, and for our present purpose, is largely of academic interest. Ewing sums the matter up in these words: "Theoretical considerations favor the origin of the melanomas from the mesoblastic chromatophore, and histological considerations favor the origin from epithelial cells which have taken on pigmentary functions: The established tumors are sarcomatous or carcinomatous in structure or both."

From the normal, diffuse deposits of melanin, we now pass to a consideration of the localized concentrations of pigment which merge, by gradual degrees from quiescent moles which are so common as almost to be regarded as normal, into the group of highly malignant melanomas. Pigmented moles are very common malformations of the skin. The characteristic feature of the pigmented mole is the presence underneath the epidermis of nests of cells of fairly large size, polygonal in shape and containing brown pigment. They are congenital in children and represent areas of faulty development of the skin. Some authors think that they are congenital in adults also. The specific cells are peculiar not only to the moles, but to the skin generally; to the choroid coat of the eye, where they are most abundant; to the arachnoid covering of the brain and spinal cord, and to some extent to mucous membranes.

Adami questions whether pigmented moles should be regarded as definite tumors because, though to the naked eye they appear sharply defined, under the microscope their connective tissue stroma merges imperceptibly into the surrounding tissue. He regards them as an excessive development of a constituent of normal skin which, for some reason, has taken on the active elaboration of pigment.

Associated with pigmented naevi and melanomas, by a curious and unexplained relationship, are groups of tumors made up of cells originating in nervous tissue. A plexiform neuroma may be found underlying a melanoma. Molluscum fibrosum and localized nueromata are related growths and frequently contain pigmented areas. Von Recklinghausen's disease is the most remarkable example of this group of tumors. One reported case of this disease presented a "veritable eruption" of tumors all over the body following an injury to a single tumor over the shoulder blade. The tumors of Von Recklinghausen's disease frequently contain melanin. A specimen of a metastatic melanoma in the liver was made up of triangular cells with large nuclei "resembling cells of the central nervous system."

Further suggestion of the association of naevi with the nervous system is found in the so-called "systematized naevi" which seem to follow the facial clefts or Voigt's lines, or the distribution of the peripheral nerves. In a case which came under our observation recently, in which there were almost universal metastasis from a malignant melanoma, there was a chain of secondary tumors, one tumor over each rib.

"It canot be definitely stated what kinds of moles are likely to become malignant," according to E. T. Bell. Nevertheless, it seems worth while to try to make some distinctions between different kinds of moles. Whether one should draw a distinction between congenital moles and those first appearing in adult life is open to question, because it is quite probable that the malformation in the skin responsible for the later development of the mole was present from birth. Probably ninety per cent of people have moles in the skin and since malignant melanomas are not excessively numerous, it would appear that the incidence of these tumors is not disproportionately large, compared with the incidence of other forms of malignancy. Of malignant melanomas of the skin, about fifty per cent develop from moles that have been present from birth, the rest from moles that first appear in adult life. Primary melanomas of mucous membrane are very rare, the recorded cases having been of tumors of the hard palate. One is reminded here of the black pigmentation of the roof of the mouth in dogs. The commonest site or origin of melanoma is the uveal tract. Melanoma of the choroid is ten times more frequent than melanoma of the ciliary body, and melanoma of the iris is very rare. Melanomas of the nail-fold of the toes, and melanomas originating in the skin of the feet after some injury deserve mention. They are highly malignant and free excision, with radium treatment offer the best chance of cure.

Of the cutaneous naevi, two classes may be distinguished: (a) the "soft naevi," which contain the characteristic naevus cells, have been regarded as arising from the basal cells of the rete Malpighii, whose function is potentially melanoblastic; (b) "hard naevi" have been regarded as arising from the other layers of the rete and are pigmented only secondarily; their cells have already begun to differentiate along the line that will eventually lead to squamous epithelium: these hard naevi are essentially papillomata with the addition of pigment and when they become malignant they form squamous epitheliomata. It is rare for the acanthotic, hard naevi to become malignant; the corium is not invaded by strands of epithelial cells. But when malignancy does commence, then indi-

vidual cells and strands of cells break away from the germinal layer, just as in true squamous epithelioma. In the study of melanoma by Dawson, only one out of thirty-seven such pigmented naevi, many of which were large and ulcerated, showed any indication of malignancy.

A melanoma which has become malignant and is increasing in size will often show an advancing zone of vascularity and soon form a hemorrhagic nodule. There will be an increase of pigmentation which merges gradually into the normal skin. The tracing of the transition from a benign to a malignant melanoma shows that the change is essentially one of an infiltrating growth which spreads by direct extension, by lymphatic channels and by blood vessels. The original tumor does not often attain any great size but the secondary growths may be exceedingly numerous, involving all the viscera. The liver is the favorite site for large secondary growths. The muscles usually show little involvement. Histologically, increased cytoplasm, and hyper-chromatic nuclei and mitoses are evidences of malignancy, but the amount of pigment present is no guide to the degree of malignancy.

The spleen is almost never involved in metastases. The reason for this is not apparent. Research is now being conducted in an attempt to explain this immunity of the spleen from these tumors. If this explanation can be found, it may throw some light on the problem of the genesis of malignant growths. From the standpoint of prognosis, the two cases cited in this paper illustrate one of the conspicuous differences in the behavior of these tumors. In one case, metastasis was into the regional lymph glands and persistent attack resulted in a cure. In the other case the metastases were universally disseminated through the blood stream, and the prognosis was hopeless.

Since we have at the present time no sure way of distinguishing between a mole which will remain benign and one which will become malignant, the wise course, theoretically, would be either not to disturb a mole by any kind of treatment, or to treat it as though it was known to be malignant. As has been stated above, the acanthotic or hard naevi are papillomata rather than true melanotic naevi, and it is probably moles of this class that have been successfully treated by the electric needle, fulguration or electro-coagulation, without recurrences or metastases. But even these moles occasionally become malignant, and the indiscriminate use of the electric needle on moles of any kind is to be condemned. Amadon reported twenty-seven cases treated by electro-coagulation, all of which had local recurrences and metastases to lymph glands within a few months. This was apparently caused by the forcing of tumor cells or of melanin into the blood and lymph channels by pressure of gas or steam generated in the tissues by the electric current. If a pigmented naevus is to be treated at all, it should be excised with a liberal margin of healthy tissue. Then, if the microscopic examination of the tumor shows that it is malignant, the regional lymph glands should be removed and a radium capsule left in the wound. Even if the naevus, after its removal, is found to be of doubtful malignancy, prophylactic irradiation of the site of the naevus and of the regional lymphatic glands may prevent a recurrence or metastasis. Recurrences, although they may give a very discouraging outlook, will, when persistently followed up, sometimes result in the unexpected cures, as in Case 1 reported herewith.

Finally, let us not forget that many patients afflicted with malignant disease cannot be cured by any means that we now possess. Therefore, a cure is not the sole object of treatment. A patient with an incurable disease is in more dire need of treatment than one who is on the high road to recovery. He needs all the physical aids that can be brought for his relief and assistance; he needs moral support; he needs the assurance that he will not be abandoned because his case is hopeless, and that his physician has not lost interest in him because a cure cannot be effected.

MALIGNANT TUMORS OF THE URINARY TRACT

THEODORE H. SWEETSER, M.D.
MINNEAPOLIS

ALTHOUGH there has been a gradual improvement in the results of treatment of cancer of the urinary tract during the past 20 or 30 years, we still find that many, perhaps a large majority, of such cancers are incurable when the diagnosis is finally made. Pleas for earlier diagnosis are still needed. To some extent the delay is unavoidable because the cancer at first may be symptomless. Some of the delay may be charged to the patient because he may disregard a painless hematuria or may take patent medicine for an unexplained bladder irritability. But some of the delay may be charged to the physician who treats a patient with hematuria, bladder irritability or kidney pain without a proper explanation of the cause of the trouble.

Hematuria always demands an adequate expla-

*For previous discussion and illustrative pyelograms by the author see "Pitfalls in the Diagnosis of Renal Tumors," Minn. Med., 16: 235, April, 1933.

nation, and a complete explanation nearly always necessitates a complete urologic examination. Hematuria does not always come from a new growth; it has many possible causes, including a few, such as acute gonorrheal urethritis, in which cystoscopy is contraindicated. But the three most common causes—stone, tuberculosis and tumor—all demand thorough investigation and treatment. An unstudied hematuria due to cancer may cease with rest in bed, and the cancer may be incurable when bleeding next occurs.

Barringer,[1] in reporting cases of bladder tumor, says that "in most patients there was a lapse of over a year before they sought hospital treatment. The large majority of these cases had sought medical advice much earlier in their disease." One patient under my care at this time had intermittent hematuria for over a year before he consulted a physician complaining of frequent difficult urination, loss of weight, and anemia; he had a large papillary carcinoma of the bladder.

Another patient, in whom we found an adenocarcinoma of the kidney, had consulted several physicians during the preceding three years for hematuria and lumbar pain; they had given various medicines and treatments without any adequate attempt at diagnosis. On the other hand, in still another patient I found blood coming from the right ureter but found no abnormality in pyelograms or ureterograms; as we were considering exploration of his right kidney some days later, he had a sudden pain in the left loin and cystoscopy demonstrated bloody urine coming from the left kidney only; the patient had no operation but ceased bleeding after administration of ovarian substance and is still living with no sign of tumor after several years.

We will accomplish much if we shall be able to make the profession and the public realize that hematuria demands adequate explanation, even though that may require a complete urologic examination. Such a complete urologic examination should include a search of the urethra, bladder, ureters, and kidneys, by urethroscopy, cystoscopy, cystography in many cases, urethral catheterization, renal function tests, cytologic and cultural examination of the urines from the kidneys, ureterography and pyelography. There are many causes of hematuria and sometimes two causes in one patient. One occasionally hears of bleeding from an enlarged prostate concomitant with bleeding from a tumor of the bladder or kidney. I shall never forget one case in which I found prostatic bleeding but failed to find a papilloma in the lower third of the right ureter which was not bleeding at the time and was not visible at the ureteral meatus.

Diagnosis of carcinoma of the urethra is accomplished by inspection, palpation, and urethroscopy; such growths are very rare in the male and only occasionally seen in the female. Carcinoma of the bladder is usually diagnosed by cystoscopy. Rectal palpation and cystogram with skiodan and with air may help in determining the size of the growth and the degree of infiltration into or through the bladder wall.

Carcinoma of the ureter and of the renal pelvis are difficult of diagnosis, sometimes impossible. Carcinoma of the ureter is suspected when blood comes from one ureter, the pyelogram being normal and the ureterogram deformed; one may occasionally see the growth or its implants at the ureteral orifice. Sometimes the ureteral growth is an implant from a papillary carcinoma of the renal pelvis. Of carcinoma of the renal pelvis, the papillary type is most common. Any papilloma of the renal pelvis, as of the bladder, is potentially malignant and should be treated as such. It typically, as in the bladder, gives rise to implants which may be scattered down the ureter and even onto the bladder mucosa. A filling defect may be discovered in the pyelogram. It must be remembered, however, that blood clots and non-opaque renal calculi sometimes cause confusion. Pyelography is our most important single aid in the diagnosis of tumors of the renal cortex. I will show some pyelograms but must add that the interpretation of pyelograms is much too large a subject for detailed discussion on this occasion.* A tumor causing a palpably enlarged kidney mass is quite apt to be found to be inoperable. The patient with a renal cancer is indeed fortunate if his trouble can be accidentally discovered before the onset of any symptoms. We discovered one such tumor during an operation for drainage of a perinephritic abscess. It should be noted that the preliminary study before treatment of any cancer of the kidney or bladder should include roentgenographic search of the lungs, pelvis and long bones for possible metastases.

As to treatment of cancer of the urinary tract there is no universal acceptance of any standard methods.

I believe that all kidney tumors without demonstrable metastases should be explored. Preoperative roentgen or radium therapy for large hypernephromata and for renal tumors of childhood (Wilms' tumors) is highly recommended by some and condemned by others with good reasons on both sides; I prefer immediate exploration. I feel that an incision should be used which will

allow clamping of the vascular pedicle before manipulation of the kidney, especially in hypernephromata which are apt to extend into the renal vein. Some advise opening the peritoneum which may be wise in cases of the childhood tumor. However, a good exposure can be obtained by an incision of the type described by Hugh Cabot in 1925,[2] extending obliquely from the lumbar region to the midline in front near the navel and thence upward in the midline as far as necessary, the unopened peritoneum and colon being reflected medially. Large hypernephromata and Wilms' tumors may or may not receive great benefit from postoperative irradiation. Some advise reliance upon irradiation alone in the Wilms' tumors. On the other hand, Beer[3] recently reported a patient who was well 19 years after operative removal of a Wilms' tumor, and Wood and Shore[4] have noted a patient who was well seven years after removal of a large hypernephroma. Irradiation is not mentioned in either report. We have followed one patient who has been well for nearly six years now after nephrectomy for hypernephroma. Isolated cures are being reported frequently enough to show that such cases are not always as hopeless as they at first seem to be. Adenocarcinoma of the kidney should be treated by nephrectomy with removal of as much perirenal fat as possible; the prognosis is not good; implantation of radium into surrounding tissues has been suggested but is beyond my experience.

Papillary carcinoma of the renal pelvis and of the ureter should be treated by nephrectomy and complete ureterectomy with removal of the ureteral orifice and surrounding bladder wall; periodic cystoscopy should be carried out later with fulguration of any implants that might develop in the bladder mucosa. Radiation is probably unnecessary for most operable papillary cancers of renal pelvis or ureter, but may be a useful adjunct in treating infiltrating growths, especially the relatively rare squamous cell carcinoma of the renal pelvis.

Carcinoma of the urethra is quite rare and I have seen none. However, Taussig[5] has recently reported four out of fourteen cases living and well beyond five years, three of them treated by excision or radiation with removal of the regional lymph nodes.

There is no agreement regarding the treatment of carcinoma of the bladder. Some treat nearly all by radium alone, some by electrocoagulation alone, some where possible by surgical removal, some by cautery and some in selected cases by total cystectomy. Most surgeons use combinations of methods or vary the method according to the type of case. There will be disagreement with my remarks no matter what I say. Carcinomas of the bladder vary in size, in type, in grade of malignancy, and in location, and all of these factors have a bearing on the treatment. The age and general condition of the patient and the condition of his kidneys should also influence the treatment.

First the situation should be surveyed by cystoscopy, cystography, renal function tests, and biopsy, and by X-rays of bones and lungs. If the renal function is poor one may do preliminary nephrostomy as advised in 1932 by Boyd,[6] rather than to attempt implantation of ureters into the bowel. Then the growth itself should be destroyed completely at once if possible. Our failures come from incompleteness of initial treatment, whether because the growths are beyond treatment when they come or because we are too conservative in the initial treatment. We should consider all bladder growths as at least potentially malignant. We may cure small papillomas by cystoscopic fulguration but we should be very sure to completely destroy the base at the initial treatment. We should repeatedly observe these cases cystoscopically for years to destroy implants and recurrences, remembering that recurrences are liable to be more and more malignant and infiltrative. When in doubt as to the adequacy of cystoscopic fulguration we should open the bladder suprapubically and destroy the growth by excision or resection if in the vault or by cautery or cutting current combined with electrocoagulation or low heat cooking with cautery if in base, trigone, or vesical outlet. Radium does not appeal to me as being any more effective than low heat cautery or coagulation, and is known to give very distressing pain when placed in the vesical outlet, and to give large sloughs in some cases. Electrocoagulation seems to have superceded the cautery in many clinics and I have used it successfully but I would like to mention in favor of the latter, that after cautery removal, the low heat cautery can be applied with hope of controlling fairly the degree of penetration (a finger in the rectum may help), whereas in bipolar electrocoagulation various authors have noted irregular and excessive penetration of the lethal effect resulting in pericystitis (this has also been seen in radium treatment). I have one patient who is well six years after such a cautery treatment of a squamous cell carcinoma of Grade III malignancy located near the left ureteral orifice, and measuring 2½ cm. in diameter with a pedicle over 1 cm. in diameter and with distinct infiltration beyond the pedicle; an area of bladder wall over 3 cm. in diameter was thoroughly cooked. That patient has

had some 14 cystoscopies in the six years, with slight signs of trouble only once, within four months after operation. Counseller has remarked that in some cases implants and extensions occur no matter what the form of treatment. I treated one patient with a small growth by fulguration and radium over a period of almost two years with very encouraging results apparently—occasional implants but no signs of infiltration. Then I noted slight signs of irregularity at the original growth and operated suprapubically—to find an infiltrating growth. It finally involved the ureter and led to death from renal infection, as happens in so many cases of bladder cancer. On the other hand I have on at least two or three occasions been surprised at the remarkably good though probably not permanent relief in very large and malignant growths of the bladder base and vesical outlet by use of surgical diathermy and electrocoagulation. Total cystoscopy theoretically should be an ideal treatment; the bladder is not an essential organ, and metastasis does not often occur early from cancer of the bladder. However, transplantation of the ureters to the bowel is not yet a safe procedure in such cases nor are its late results yet proved to be uniformly good. The cystectomy itself is said to be none too simple in some cancer cases. Permanent lumbar nephrostomy or ureterostomy is often not acceptable to the patients. So in practice we depend on fulguration and electro-coagulation through the cystoscope or suprapubically; radium or its emanations through the cystoscope or suprapubically, resection or excision if the growth be favorably situated; and cautery excision, followed by low heat cooking of the base. Each method has its advantages and disadvantages and its fields of usefulness. I hope that with all our more modern and more dramatic methods of treatment, we will not lose sight of the advantages of the low heat cautery.

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MALIGNANT TUMORS OF THE THYROID GLAND

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MALIGNANT tumers of the thyroid gland are not extremely rare when one considers the numerous statistical studies showing from one per cent to three per cent of all nodular growths in this gland are carcinomata. However, it is only rarely that this type of malignancy is diagnosed pre-operatively since only a small single area in a benign nodule is involved early in the disease. On the contrary, when there is a hard fixed tumor, hoarseness, dyspnea, and immovable vocal cords, the nature of the condition is obvious. By this time metastases are likely to be extensive, in fact they often occur so early in the disease that their origin may be obscured.

Carcinoma

Considerable confusion exists concerning the histological classification of thyroid cancer. The classification should be simple to be of value in the clinical management. Pemberton, in his classification, divides malignancy of the thyroid into three clinical groups. This classification is simple and of considerable help in the clinical management. He divides carcinoma of the thyroid into the (1) papillary adenocarcinoma, (2) malignant adenomata, and (3) diffuse growths of the scirrhous type including a few of the spindle-cell variety. The microscopic diagnosis of malignancy in the thyroid is not always easy even for the trained pathologist since there is a great diversity of histologic features as well as a marked similarity to benign conditions. However, actual invasion by the neoplastic cells of the blood vessels, if found, is a reliable criterion upon which to base a diagnosis of malignancy.

It is not surprising to note that metastasis takes place early in this disease when one considers the rich blood supply of the gland, its proximity to the lymphatics and large blood vessels. The incidence and extent of metastasis varies greatly with the type of lesion and the degree of malignancy, it being noteworthy that the papillary type of growth frequently shows late metastasis and then only to the regional nodes. Highly malignant lesions, such as spindle-cell varieties, are of rapid growth, produce early distant metastasis and usually proves to be speedily fatal. Therefore, in the treatment of this condition, both the factors of the extent of the growth and the histological structure of the lesion must be kept in mind.

The so-called classical symptoms of thyroid malignancy are those of the end stages of the

disease and are not always characteristic. These patients are usually in the fifth and sixth decades of life and in most of the cases there is a history of pre-existing nodule or unilateral enlargement of the thyroid gland. A nodule such as this may suddenly enlarge, it usually becomes harder, more nodular and soon symptoms of tracheal compression or laryngeal involvement are present. Mediastinal or pulmonary extension may produce dyspnea but pain is frequently a late phenomenon. Pressure on the recurrent laryngeal nerve or direct extension of the growth into the trachea results in hoarseness and cough, and if the esophagus is encroached upon dysphagia is present. Hoarseness is a significant symptom, since it usually means that the tumor has broken through the capsule and that the nerve is actually invaded or pressed upon. These symptoms are rarely present until the condition is relatively hopeless.

In the early stages of thyroid malignancy there are no symptoms that are positive and diagnostic. Suggestive symptoms and findings, however, are slow growth of a pre-existing adenoma, increasing firmness of the tumor, pressure sensation and lack of freedom of movement on palpation.

Differential Diagnosis

Clinically we must differentiate thyroid tumors from Riedel's type of chronic thyroiditis, tuberculosis, and sudden hemorrhage into an adenoma. In general, in non-malignant tumors of the thyroid, involvement of the recurrent laryngeal nerve is very rare. The question of the possibility of carcinomatous lesions of the thyroid to produce hyperthyroidism has not been completely settled, although Pemberton states that this condition practically never takes place. When there is enlargement of the gland along with a condition of hyperthyroidism, the presence of malignancy is very rare, although in Pemberton's series, 87 per cent of the cases of malignancy were associated with benign nodules elsewhere in the gland. It is these benign adenomata which are most likely to cause hyperthyroidism.

In the differential diagnosis there are several conditions to be considered. The most noteworthy, although rare, is the so-called Riedel's struma or woody thyroiditis. The etiology of this disease has been variously ascribed to tuberculosis, lues, and other types of chronic inflammation, but no convincing evidence of any of these factors has been presented. In this disease the gland is so hard that its consistence has been described as stony or like that of iron. However, its contour is smooth and rounded, the normal shape of the gland is retained, there is no hoarseness, and there is little or no fixation of the gland to the surrounding structures. There is no evidence of extension to the regional nodes and distant organs. Malignant tumors are usually nodular and unilateral, they frequently metastasize early and soon involve the recurrent laryngeal nerves so that hoarseness and dyspnea are relatively common symptoms. The indications for surgical removal of the gland effected by woody thyroiditis consist mainly in pressure symptoms such as dyspnea and dysphagia. When surgery is undertaken for this disease it should, if possible, be limited to partial resection of the gland, since, as a rule, very little functioning gland tissue is left and myxedema may result. Late in the disease myxedema is common, but this may be controlled satisfactorily by the oral administration of thyroid gland extract.

Tuberculosis of the gland, while extremely rare and of little clinical importance, is occasionally confused with malignancy. It has been noted that tuberculosis occurs frequently in association with increased functional activity of the gland in the distinction to malignancy which rarely invades a gland already involved with hyperthyroidism. The disease is most frequently a part of a generalized tuberculosis or secondary to an acid-fast infection elsewhere in the body; the result may either be a frank abscess formation or a chronically inflamed fibrotic mass. Microscopically the latter type shows tubercles intra or inter-follicularly. The surgical treatment is incision of the abscess or lobectomy depending upon the condition encountered. The prognosis is excellent, according to Rankin and Graham. From their studies they could not conclusively determine whether the hypertrophic gland is rendered more susceptible to invasion by the bacillus of tuberculosis, or whether infection stimulates the parenchyma to abnormal activity resulting in hyperthyroidism.

Hemorrhage into a thyroid adenoma may produce a most confusing picture. The history, however, in most cases gives the correct diagnosis. The patients may or may not have previously noted a goiter. Suddenly, as a rule, following exertion, the adenoma of the thyroid increases definitely in size. This swelling occurs in the matter of a few hours or a day and is associated with marked local tenderness and at times with symptoms of choking and pressure in the neck. The tumor, following hemorrhage, tends to subside slowly over a period of days or a few weeks. Such a history differentiates at once the firm, hard swelling which is present on examination in these cases as due to a recent hemorrhage and not to malignant degeneration. Malignant degeneration of an adenoma, though it may be rapid, is never a condition de-

veloping within a matter of hours or one or two days.

Sarcoma

Almost every conceivable type of sarcoma of the thyroid has been described, including the fibro-, chondro-, osteo-, lympho-, hemangio-sarcomata, and also the round, spindle and mixed cell variety. Metastatic sarcoma involving the thyroid gland has occurred, but it is very rare.

Grossly, thyroid sarcomata are usually unilateral or median tumors; rarely do they produce a diffuse involvement of the gland. The rapidity of growth of these lesions is extremely variable, depending upon their degree of malignancy. The more differentiated types, such as the fibrosarcomata, are of slow growth, while the more embryonic types, especially the round cell variety, enlarge rapidly, metastasize early and widely, and death commonly takes place relatively soon after the onset of symptoms. Hemorrhages and necrosis are common in the latter type of case, and in some cases of this nature enlargement has been so rapid that the condition has simulated a phlegmon of the neck.

As the malignant tumor grows it invades adjacent tissues, the veins of the neck, the trachea, larynx, muscles, arteries, nerves and skin. The original contour of the gland soon becomes completely destroyed from extension of the growth. Symptoms of compression of the esophagus, of the trachea, and especially of the recurrent laryngeal nerve, early giving rise to hoarseness, are common. Death commonly occurs from respiratory difficulty due to edema and compression of the glottis.

(Continued in June 15th Issue)

NEWS ITEMS

Dr. B. J. Crowell, Austin, Minn., has been elected a member of the American College of Medicine.

Sioux Falls will be the meeting place of the annual meeting of the South Dakota Medical Association for 1936.

Dr. David Fleet, South Shore, S. D., has moved to Cheyenne, Wyoming, and will continue in active practice in that city.

Dr. Lieberman, a recent graduate of the University of Minnesota, has located at Prior Lake, Minn., for general practice.

Dr. M. J. Miller, formerly of Minneapolis, has moved to Brainerd and is now associated with the Holman Hospital of that city.

Dr. J. H. Hanley has returned to Cass Lake, Minn., after an absence of several years and resumed active practice of medicine.

Dr. Richard Nierling, has returned to Jamestown, N. D. and has become associated with the DePuy-Sorkness Clinic of that city.

The Ramsey County Medical Society recently celebrated the seventy-fifth anniversary of the founding of the society at St. Paul in 1860.

Dr. S. Marx White, Minneapolis, attended the annual meeting of the American College of Physicians held at Atlantic City, N. J., last month.

Dr. E. S. Judd, Rochester, was one of the guest speakers at the annual meeting of the California Medical Association held on May 10 and 11.

Miss V. R. Schneider, St. Paul, president of the Twin City Society of X-ray Technicians, is in Dallas, Texas, as a delegate to the National convention.

Dr. J. S. Shrader, who has been in active practice at Springfield for over 35 years, has recently moved to Jordan, Minn., where he will resume practice.

Over 3,000 persons visited the Veterans Hospital at St. Cloud, Minn., on Hospital Day. This being a record attendance for any hospital in the Northwest.

Two hundred and sixty thousand dollars will be spent for new construction and improvements on the Veterans Hospital at Helena during the coming year.

A new $150,000 addition to the state hospital at St. Peter, Minn., will be erected this summer, which will bring the capacity of the hospital up to 2,200 beds.

Dr. Wm. T. Peyton, Minneapolis, was the guest speaker at the May meeting of the Swift-Kandiyohi-Meeker County Medical Societies held at Litchfield, Minn.

Dr. E. T. Evans, Minneapolis, was the guest speaker at the May meeting of the Wright County Medical Association, held at St. Cloud, his subject being "Fractures."

Dr. Max W. Alberts, St. Paul, has been named as a member of the Minnesota State Board of Medical Examiners to succeed Dr. E. J. Engberg, whose term has expired.

The Olmsted-Houston-Fillmore-Dodge County Medical Society held their May meeting at Rochester, Minn., with a large attendance and a fine scientific program being presented.

Dr. E. C. Haagenson, Grand Forks, has recently located at Shelly, N. D. and opened offices for general practice, as this village has been without the services of a physician for some time.

Dr. A. H. Bishop, Dunnell, is now located at Milroy, Minn., where they have been without the services of a physician for several years. A fine opening and the doctor is receiving a warm welcome.

Dr. E. S. Platou, Minneapolis, was the guest speaker at the May meeting of the members of the Ramsey County Medical Society, his topic being "Scarlet Fever and Diphtheria Immunization of Children."

Dr. A. F. Irwin, who has been an active practitioner of medicine in Minneapolis, for over 30 years, died at his city home on May 10, of heart trouble. Dr. Irwin was a graduate of the University of Minnesota.

Duluth, Minn., will entertain the annual convention of the Hay Fever Clubs of America next month. Mrs. C. H. Lunblad, Paynesville, Minn., secretary, will be pleased to extend any information in regard to the meeting.

Dr. Martin Nordland, president of the Minneapolis Surgical Society, gave a talk on "The Role of Surgery in Disturbances of the Thyroid Gland" at the eighty-fifth meeting of the Illinois State Medical Association at Rockford, Ill.

Dr. Henry E. Michelson, Professor of Dermatology at the University of Minnesota, was a guest of the physicians of Butte and Anaconda, Montana, on May 18th. He gave a clinic and lecture on diseases of the skin and syphilis.

The University of Minnesota and the Mayo Foundation Alumni, who are planning to attend the American Medical Association meeting at Atlantic City, are urged to attend the annual dinner at the Ambassador Hotel on June 12.

Dr. William A. O'Brien, of St. Paul, associate professor of preventive medicine, public health, and pathology in the University of Minnesota School of Medicine, has been elected a director of the American Society for the Control of Cancer.

Dr. Jennings C. Litzenberg, head of the University of Minnesota department of obstetrics and gynecology, discussed "Milestones in the History of Obstetrics and Gynecology" at a public meeting held at the medical science amphitheater, Minneapolis.

Minneapolis lost one of its pioneer physicians in the death of Dr. R. D. Matchan, at the age of 81 years. Dr. Matchan was a graduate of a Philadelphia Medical College, and for many years he was instructor of medicine at the University of Minnesota.

Dr. A. M. Jensen, Minneapolis, a recent graduate of the University of Minnesota, was married last months to Miss Margaret Benson of Center City, Minn., and they will reside at Paynesville, Minn., where the doctor has opened offices for general practice.

At a recent meeting of the Brown-Redwood County Medical Society held at New Ulm, the following were elected officers to serve during the coming year. Dr. A. P. Goblirsch, president; Dr. C. Saffert, vice-president, and Dr. Carl Fritsche, secretary.

Dr. R. S. Westaby, Madison, S. D., was obliged to have an operation for serious bladder trouble. The doctor has been showing marked improvement each day, and it was expected that he would be able to return to his practice in a few weeks of quiet rest.

The Minnesota State Medical Association broadcasts weekly at 10:30 o'clock every Tuesday morning over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota is the speaker. The program for the month will be as follows: June 4, "Your Heart"; June 11, "Chorea"; June 18, "As We Grow Older"; June 25, "Vacation Time."

Led by Drs. Peter Potter, Caroline McGill, and James C. Shields of Butte, Montana, a group of Silver Bow County physicians are holding a series of post-graduate lectures independent of any medical organization. Physicians who attend will pay a fee not to exceed $15.00 for the two or two-and-a-half day session at Butte. It is planned to have from 10 to 15 lectures, delivered by at least three well-known physicians. The date at the present time has not been set, this decision resting with those physicians signifying their intention of attending. Information will be gladly extended by addressing any of the above doctors.

The Fifty-Fourth Annual Session of the South Dakota State Medical Association, the Twenty-Fifth Session of the Women's Auxiliary, and the South Dakota Academy of Ophthalmology and Otolaryngology were held at Pierre, S. Dak., May 13, 14 and 15, 1935. The Academy of Ophthalmology and Otolaryngology was held at the Pierre Clinic building. The crop failures of the last two years, with the accompanying financial

stringency, were indicative of a small attendance. However, the attendance was above the average. The clinical and scientific programs were well attended. The clinics were well presented and the papers were timely subjects, and well presented by the essayists. A very interesting case to the physicians of South Dakota and similar states infested with the grasshoppers, was presented by E. R. Serles, Ph.D., Dean of the School of Pharmacy, South Dakota State College. Dean Serles cited a case of chronic arsenic poisoning as developed from the handling of grasshopper bait. The business meetings of the Council and House of Delegates met and received reports from the standing committees. These reports were well presented and showed careful study. The report of the Economics Committee, a very comprehensive outline for a co-ordination of all activities in public health programs, the Department of Health, the State Medical Association, and all lay groups interested in public health programs, was outlined in the report. The selection of Dr. B. A. Dyar, of De Smet, as contact officer and designated as executive secretary of the State Medical Association, and as State Epidemiologist, will make possible the carrying into operation the program of the Economic Committee. The Auxiliary held their meeting, celebrating their 25th anniversary, the Women's Auxiliary of the State Medical Association having been organized at Hot Springs, S. Dak., in 1910, and holds the honor of being the first auxiliary to be organized in the United States. After their business program the ladies were entertained by the Pierre District Women's Auxiliary. The entertainment including a tea at the Governor's Mansion, with Mrs. Tom Berry, wife of the Governor of South Dakota, as hostess. The annual dinner was the main social feature of the meeting. The Honorable J. E. Hipple, mayor of Pierre, gave the address of welcome. His Excellency Tom Berry gave a short talk at the dinner. The main address of the evening was given by Henry F. Vaughan, Commissioner of Health of Detroit, Mich. Following the dinner, the ladies were entertained by the Pierre District Auxiliary at a movie, and the men a smoker at the country club. Dinner was served by the ladies of the Eastern Star. The Pierre District Medical Society as hosts are to be congratulated on the efficient manner in preparation of the program and entertainment of the visiting doctors and ladies. The facilities at the Masonic Temple for the clinics and scientific sessions, and the various luncheons and dinners, made this an ideal arrangement for the convenience of all activities.

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The Diagnosis and Treatment of Anal Fissure

Harold E. Hullsiek, M.D.*
St. Paul

NOT sharing the belief that the mere act of putting medical terms together is sufficient grounds for their publication, I begin this short paper with some hesitation. That the too casual treatment of anal fissure is partly due to the occasionally hazy discussions of diagnosis and treatment in most articles and some books, I have no doubt. Added to this is the attitude of the physician, who from the apparent insignificance of the complaint erroneously views it as meriting no study, in feeling that because an anal fissure is simple to him its possessor feels the same way about it.

The relief of anal fissure depends on correct diagnosis and treatment, and it has seemed to me not amiss to set down in plain English, with no tricky omissions to befuddle the uninitiated, exactly how to accomplish both of these things.

If the diagnosis is made before the patient is put on the examining-table, which can be done nine times out of ten, the period required in the acutal procedure is shortened and the process renedered less uncomfortable in every way. The history of fissure is typical. Its occurrence almost invariably follows the passage of a hard fecal mass, and oftener than not gives little discomfort at the actual time of the break in the mucosa. Within an hour or two the patient experiences a slight itching or burning sensation in the anus, with gradually increasing discomfort until the typical dull aching or throbbing pain becomes constant. If no treatment is given the pain soon assumes a periodicity. The bowel movement is attended by a sharp cutting pain and the passage of a small amount of bright blood, followed by a throbbing ache lasting several hours and finally disappearing, only to have the same sequence of events occur at the next movement. Despite the fact that the patient invariably tells one that he is suffering from piles, the above story should suggest what to look for, and where and how to look.

The patient is put on the table in the Sims position, and with the exquisite tenderness in mind, the first thing done is not the customary thrust of a gloved finger. Seated on a stool behind the patient, the operator adjusts his headlight and makes a minute inspection of the anal orifice. While admitting the comparatively narnow limits of the anal area, I still feel that it is worth while to save time by looking in the right place first. Nine times out of ten this is in the posterior commissure of the anus. Why? Because of the fact that the pubo-coccygeus fibers which form the external sphincter do not encircle the anus in a like manner on all sides, many passing upward posteriorly where they eventually join the coccyx as the ano-coccygeal ligament. Although some pass directly across the commissure, the decussating and deploying of many forms a definitely weak spot in the circle. Add to this the fact that owing to the curve of the rectum and the usual position at stool, the force of the

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downward-passing fecal mass impinges with its greatest force on the posterior commissure, and it is easily seen why so many fissures occur at this point. The approximate percentages are shown in the accompanying figure. (Fig. I).

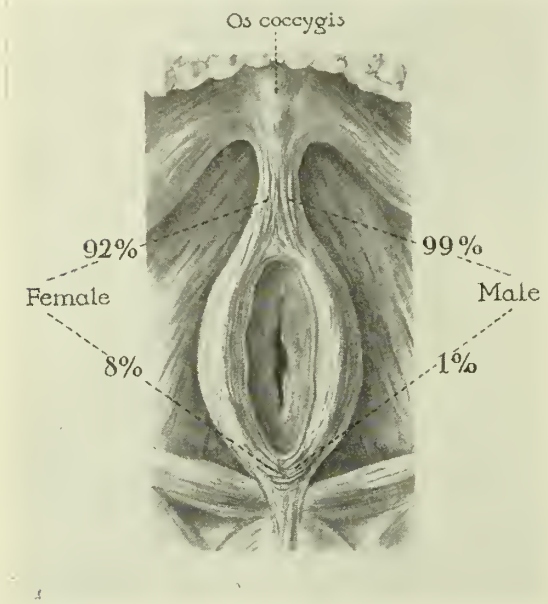


FIGURE I

Percentage of occurrence in the various sites, as well as the deploying of the fibers of the sphincter in the posterior commissure forming a weak area.

Almost invariably a fissure can be seen on inspection without the aid and additional discomfort of an anuscope. If the skin about the posterior commissure is gently retracted, the lesion usually presents itself as a small ulcer with overhanging edges, its long axis corresponding with that of the bowel, and its widest part nearest the skin edge. It may or may not have associated with it a sentinel pile. After inspection is completed a digital examination is in order, not to make a diagnosis, since this has already been done, but to ascertain the presence or extent of any other pathologic change. If the lesion is in the acute and painful stage, one has, by this time, been made well aware of it, as well as whether a gentle digital examination is possible. Often this may be done with little pain. If not, a tightly-wound cotton swab is dipped in one per cent diothane and passed into the anal canal where it is left for a few minutes. Repeating this two or three times over a period of ten minutes transforms a needlessly brutal procedure into one that is reasonably humane.

Assuming that there is no complicating disease, the question of treatment resolves into a choice of two methods, depending chiefly on the presence or absence of a sentinel pile. The so-called



FIGURE II

Fissure in posterior commissure without sentinel-pile.



FIGURE III

Fissure in posterior commissure with sentinel-pile at outer end drawn slightly to right by uneven retraction.

sentinel pile, which is not a true pile in any sense, is merely a heaped-up mass or tab of edematous and inflamed tissue and skin over hanging the outer end of the fissure. In general, the presence of a well-defiined sentinel pile may be taken as the indication for surgical treatment. When this is absent the patient can usually be relieved without operation.

In a consideration of the non-surgical treatment of anal fissure, one of the first things we meet is our old friend silver nitrate, in this case one of those time-honored traditions so well-known in medical practice and so difficult to overcome. For many years this remedy has been mentioned by writers on rectal disease chiefly, I imagine, because all the previous ones did so, and if they hadn't, someone might assume them ignorant of it. It is always grouped with several other so-called remedies to be used as topical applications, and is actually used oftener than the others for the simple reason that it is usually the most readily accessible. I do not believe that silver nitrate posses the slightest therapeutic value in the treatment of anal fissure. Certain types of fissure heal without operation, some even without treatment, but it does not follow that simply because silver nitrate has been used it must be credited with the cure. Small recent fissures without sentinel piles frequently heal spontaneously if the stool is kept soft with oils and demulcents, the only treatment necessary being that directed to alleviation of pain until this is accomplished. I have seen far too many ulcers of the anus with surfaces tanned and thickened by repeated applications of silver nitrate to harbour the delusion that this procedure effects anything other than an increase of pain and a delay in the normal healing process.

The anal orifice being constantly infected, and having through centuries become inured to the effects of ordinary bacteria, it is equally ridiculous to dab on antiseptics in the optimistic belief that by some miracle healing will be hastened. The strictly non-surgical treatment thus amounts to nothing more than the relief of pain and the bringing about of such conditions as will allow healing. For the first, salicylates or allonal to relieve the sometimes exquisite pain following stool, as well as a hot sitz bath for 15 to 20 minutes after a movement; the instillation of one per cent cocaine ointment, nupercaine ointment, or one per cent diothane ointment is recommended. To prevent the ulcer from being traumatized each time the bowels move, mineral oil night and morning or some form of agar-containing preparation twice a day is used. The latter adds both water and bulk to the stool and may be in the form of petrolagar, petro-psyllium, para-psyllium, xymenol or a similar preparation. It is my practice to give one of the above-mentioned demulcents night and morning, always remembering that little softening effect is attained from these agents until at least 48 hours after the first dose. Under this regime many fissures of the type with no sentinel pile can be cured. Many of those in the posterior commissure may be healed this way, of those in the anterior a still greater proportion, and virtually all of the laterally-placed ones.

If success does not attend these efforts, we still have recourse to another non-operative method, the injection of quinine and urea hydrochloride or nupercaine in oil. Again, the greatest likelihood of a successful outcome is in those fissures with no sentinel pile. It is not an infrequent experience to see a patient who is suffering intense pain, unable to stand or sit in comfort, who cannot sleep and whose bowel movements cause excruciating agony, and who is afforded complete and permanent relief following a single injection. The technic of this procedure again requires the Sims position, a good light, and preferably a nurse to retract the area about the fissure. One or two cubic centimeters of five per cent quinine and urea hydrochloride is put into a syringe equipped with a fine sharp needle, the skin immediately external to the outer end of the fissure touched with iodine or merthiolate, and the injection made. The needle is inserted at a point one-fourth of an inch distal to the outer end of the fissure, and, entering the subcutaneous tissue, is carried obliquely inward until its point is directly below the center of the lesion, where one to one and one-half cubic centimeters are deposited. Pain at the instant of injection is some-

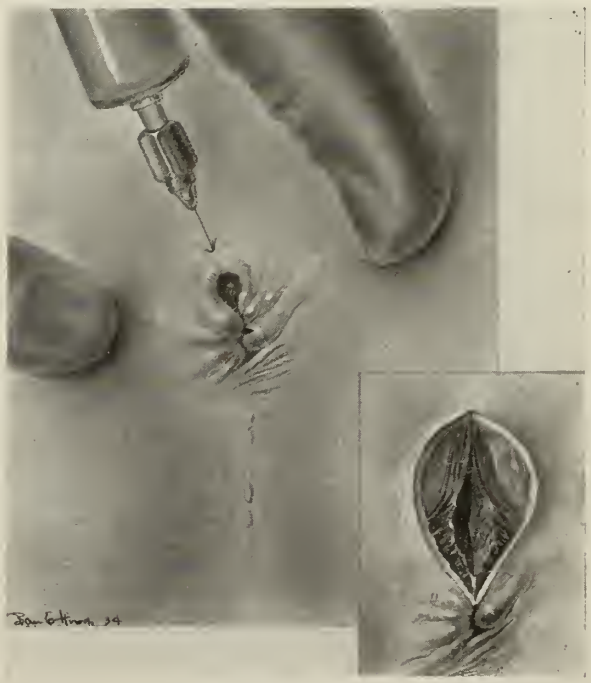


FIGURE IV

Fissure in posterior commissure without sentinel-pile with needle inserted for injection. Inset shows operation with some fibers of sphincter divided and skin edges removed.

times severe but seldom lasts more than a minute or two. Recently nupercaine in oil in amounts of 1 to 3 cc. have been used with highly gratifying results. No dressing or other application is necessary, but the same attention is given the bowels as mentioned above. Often one injection will effect a cure. This takes some time and if the patient is comfortable the second treatment may be delayed four or five days, and then given only if the fissure fails to show evidence of healing in its diminution in size and change from an angry red to a grayish-pink color. Quinine and urea hydrochloride may be procured in one cubic centimeter ampules of five per cent solution, in one ounce and in three ounce bottles, sterile and ready for use.

The surgical treatment is reserved for individuals having definite sentinel piles, as well as for fissures complicated by other conditions requiring operative treatment. Patients with the sentinel-pile-fissure combination and otherwise uncomplicated may be sent to the hospital the morning of the operation, the enema having been omitted the night before because of attendant discomfort. Before operation a tap-water enema is given and no skin preparation is made in the patient's room; it is my practice to give three grains of sodium amytal an hour before the operation and a small dose of morphine fifteen minutes before. In the operating room, the patient is placed on his abdomen with the pelvis elevated over a kidney-rest or a hard pillow; the parts are painted with merthiolate and sufficient one per cent novocaine (20 to 30 cc.) injected into the sphincter to produce relaxation. The anesthetic solution is also injected beneath the fissure and for a distance of at least an inch and a half distal to it in the skin. The sentinel-tag is then excised, and with one finger in the anal canal to bring the entire fissure area well into view an incision is made down through the fissure in its long axis, extending slightly beyond it into the anal canal and out onto the skin above the anus for at least an inch. The incision is carried deep enough to divide some of the fibers of the external sphincter, and at the outer end the skin edges are removed for a distance of at least a quarter of an inch on each side. The resultant wound is somewhat racket-shaped, the handle of the racket extending into the anal canal, deepest at its outer end in order that the inner or mucosa end may heal first, leaving the skin end open for drainage.

There need be no hesitancy concerning the cutting of the sphincter fibers in the posterior commissure since this does not result in loss of control for the same reason as that given for the frequency of occurrence of fissure in this area, the deploying of the fibers at this point. An incision here relieves tension on the fissure by relieving muscle-spasm, allowing it to heal and decreasing the pain, but actually divides few fibers. A light packing of iodoform gauze is inserted in the wound itself, left in for twenty-four hours and then removed permanently. The same care is given to the bowels as in the non-surgical treatment, and with a full diet begun the evening of the operative day, the bowels move normally on the third or fourth day without the irritation of an over-acting cathartic. Hot sitz baths twice a day and salicylates or allonal will usually relieve the little pain that follows. The wound should be dressed and observed frequently while healing is taking place and demulcents used for some weeks to render the stools soft.

LOW BACK INJURIES*

John R. Vasko, M.D.
GREAT FALLS, MONT.

ONE OF the most stubborn group of conditions the medical profession has to treat is the low back injuries group. We all have these cases and we all have some which refuse to respond to treatment. Most prominent among the reasons for this frequent failure to treatment is perhaps our lack of knowledge concerning the normal anatomy of the lower spine, improper diagnosis and inadequate treatment. It will be my purpose in this paper to call your attention to the more common of these injuries and to some of the less common injuries which occur to the lower back and also their treatment.

I will mention the salient points about the anatomy of the normal spine under consideration. The normal lumbar spine has five vertebrae, the fifth of which rests upon the first sacral at an angle of about 40 degrees. The intervertebral disc is wedge-shaped, and is subjected to great strains and stresses because of the shearing present between the fifth lumbar and the first sacral. When this 40-degree angle is greater obviously the shearing force will be greater and more strain be put upon the intervertebral ligaments and the inferior articular processes of the fifth lumbar vertebrae on the first sacral. The lumbar spine normally has a forward curve which if exaggerated to a lordosis, also produces greater strain upon the lumbo-sacral joint. The intervertebral articulation of the upper

*Presented before the Mount Powell County Medical Society at Anaconda on April 9, 1935.

four lumbar vertebrae are normally in the sagital plane. The articulations between the fifth lumbar and first sacral lower are obliquely situated, the inferior articular processes of the fifth lumbar lying posteriorly to the superior processes of the first sacral. Normally these lumbo-sacral articulations have the same degree of obliquity. The transverse processes of the fifth lumbar vertębrae also are normally not closely proximated to the iliac crests and do not articulate with them.

The most common of low back injuries is the group of sprains—the sacro-iliac sprains, the lumbo-sacral sprain, the ilio-lumbar sprain, and the intervertebral sprains. By sprain is usually meant a gross or microscopic tearing of the fibers of the ligament resulting in scar formation and ending in impaired elasticity, and firmness of the ligament, frequently leading to a pathalogic relaxation.

Pathology

The pathology of the lumbo-sacral and sacro-iliac sprains is not always the same, but is thought to be either a gross or microscopic rupture of ligamentous fibers or a subluxation of the joint. This latter subluxation is not demonstrable in the X-ray but the frequent relief obtained by patients in whom a manipulation was done accompanied by a definite click compels us to assume that such a subluxation is present. It is also thought that the synovia of the joint becomes injured and inflammed in and about which adhesions frequently form. Old cases are frequently accompanied by an arthritis.

This group of sprains most frequently occurs following a sudden twist of the trunk, a sudden lifting of a weight with one or both feet on the ground or a direct blow to the back either from a fall or from an object striking the back, causing a hyper-extension or a hyper-flexion of the spine. If we remember that the entire weight of the trunk rests upon an area of about two square inches, namely, the lumbo-sacral articulation, and in addition that leverage greatly magnifies the force transmitted to this region, it is readily understood why these ligaments sometimes tear and why in some cases even bone gives way.

During the acute stage the symptomatology of the entire sprain group may be very similar. Following the injury the pain may come on at once and be definitely localized or it may not be noticed until the next day after hemorrhage into the tissues has occurred. A definite click or snap may be felt or even heard by the patient at the moment of injury; this is a frequent history in sacro-iliac injuries. The patient may be disabled at once or not until the next day depending upon the location of the injury and the severity. The patient then complains of pain in the back, that walking is difficult, that he gets relief when in a reclining position, that bending the back is painful and difficult and that lifting is either impossible or very painful. A change of position from sitting or reclining to that of standing is always painful. Frequently this is alleviated by walking a few steps. There may or may not be radiation of the pain depending upon the type and the severity. Sciatic nerve radiation is very common in sacro-iliac injuries and may be located in front or back of the thigh and may extend to the toes. Sometimes the pain radiates to the front of the abdomen and down to the testicles. I have seen cases which affected the bowels and bladder.

The sprain group have certain things in common: 1. There is usually a definite point of tenderness. 2. Relief is obtained when the injured ligament is relaxed. 3. The pain is increased when the injured ligament is stretched. 4. Relief is obtained when the trunk is immobolized in the position of relaxation of the injured ligament.

In examining a patient with a low back injury one does so with the patient stripped with the exception of a loin cloth. His posture is noted and his gait. One watches for a limp. The spine is then inspected for a scoliosis or tilt which frequently is present in the sprains. Mobility is then tested out by asking the patient to bend in all the directions—forward, backward, laterally, and twisting in either direction.

For the examination of mobility one of the best methods is that advised by Smith-Peterson, who advised that it be done with the patient lying down, with the patient sitting, and with the patient standing. The mobility of the spine varies with the type of sprain present.

In sacro-iliac sprains with the patient standing flexion is permitted part way until the lumbar spine begins to pull upon the pelvis. Beyond this point flexion is permitted only with the bending of the knees. Hyperextension is very limited for the same reason. Lateral motion is also limited. In the sitting and reclining positions flexion is not nearly limited as much as in the standing because the hips are flexed and less strain is put upon the injured ligaments.

In lumbo-sacral sprain the lumbar spine does not flex in a standing position but remains rigid. In the sitting and lying down positions there is no change. In the sitting position there is very little change because the tension upon the lumbo-sacral joints continues. Hyperextension in lumbo-sacral sprain is limited both in the sitting and standing

positions. Lateral motion is also limited moderately in all positions.

The ilio-lumbar and inter-vertebral sprains are limited in flexion in all positions. The other motions may or may not be limited depending upon the severity of the sprain.

By putting the body through certain passive motions much information can be gained. Compression of the iliac crests toward one another usually causes pain in a sprained sacro-iliac joint but not in a lumbo-sacral. Spreading them does the same thing. By placing the heel upon the opposite knee and externally rotating the femur pain is usually caused in an injured sacro-iliac joint but not in a lumbo-sacral. This is the Laqueur test.

When the patient lying on his back raises his leg with the knee stiff, the motion will be limited and pain will be experienced whenever there is sciatic radiation whether due to sacro-iliac or lumbo-sacral injury. Gaenslen's test is as follows: With the patient lying flat on his back the thigh and knee of one lower extremity are fully flexed and held in this position by the patient. The other extremity is then hyper-extended with pressure upon the knee. This puts a strain upon the ligaments about the sacro-iliac joint and causes pain in the injured side.

Muscle spasm is usually found in all the sprains and is usually on the side of the injury.

Those cases in which the fall or blow was severe should be X-rayed to eliminate fractures or dislocations. Sprains cannot be diagnosed by X-ray but all medico-legal cases should be X-rayed for negative evidence.

In most of the back injuries the tenderness involves one or both sides of the lower abdomen, the areas supplied by the hypogastric and ilio-inguinal nerves. These nerves also supply a small area at the upper and inner aspect of the thigh. According to Carnett if one finds tenderness in any of these areas he will find it in all four and this is indicative of an injured back. A malingerer does not know this and hence if all four areas are normal one should strongly doubt his veracity.

Prognosis

The prognosis in these back injuries should be ultimately good, but it is always safe to guard ones self in being specific as to its duration. Most cases will respond in two to four months, excepting the unusual case.

Treatment

The treatment of the ilio-lumbar and intervertebral sprains usually is successful with conservative means alone, such as bed rest for a few days, support to the lower spine with adhesive tape or a reinforced corset, and with a course of physiotherapy. This cannot be said of the lumbo-sacral or sacro-iliac sprains. Only too many of them become chronic and sometimes even spinal fusion becomes indicated.

The success of treatment in the low back sprains depends largely upon the degree of injury. The minor sprains will usually respond to taping up the back, rest, and physiotherapy. The duration may be only a few days until relief is complete. This applies to all types of sprains. The most troublesome and resistant are the sacro-iliac and lumbo-sacral sprains. These are notorious for their resistance to treatment, some cases refusing to respond to the entire conservative treatment armamentarium. Here again it is advisable to try the conservative treatment first, either the ambulatory or recumbent. Ambulatory treatment consists of taping of the lower back to immobilize it, rest, and then physiotherapy consisting of heat and massage or diathermy and massage. Conservative recumbent treatment consists of bed rest with traction either on the legs or the pelvis, partial immobilization, and physiotherapy. The patient should be kept in bed from two to six weeks with traction depending upon the symptoms. He is then allowed up on crutches with some support, usually a reinforced lumbo-sacral corset with shoulder straps and a lumbar pad. Physiotherapy is continued. After six to eight weeks if improvement is not forthcoming, the next step should be taken, e.g., the manipulative treatment. Bankhart, of England, uses manipulation in all his cases, even the acute, and he reports very good results. My experience with manipulation also has been uniformly good. The patient is given either a spinal or ether anesthetic and the lower spine thoroughly manipulated in all directions. Flexion, extension, lateral bending, and twisting of the lumbar spine are made through the normal range. Also the lower extremity with knee extended and pelvis fixed is flexed upon the abdomen to such degree that the ankle touches the forehead. This is done slowly with massage of the hamstring muscles and should require at least twenty minutes for each side. No rapid forcible motions should be done for fear of fracturing a bone or rupturing a muscle. This latter stretching breaks up adhesions, stretches the sciatic nerve, releases contracted muscles and sometimes causes a loud click, which some authorities believe to be the reduction of a subluxated sacro-iliac joint. The patient is then immobilized in a double plaster hip spica—some men think bed rest alone, with or without traction, to be sufficient. After two weeks of bed

rest, the patient is allowed up with support, a reinforced corset, a steel brace or a plaster jacket; the more chronic the case has been the more rigid the support. Crutches should be insisted upon for two or three weeks and only then should the entire body weight be allowed to be borne by the feet.

It should not be forgotten that foci of infection ought to be removed just as in arthritis. An infection elsewhere in the body sometimes causes a sacro-iliac sprain to be very resistant to treatment.

Another conservative method of treatment is the epidural injection which is made into the sacral canal just above the coccyx. This is done under local and from 20 to 60 c.c. of one-half per cent novocaine or normal saline is slowly injected into the epidural space. Sometimes the patient will obtain relief with one injection, others with several injections, and still others never get relief with this method. The simplicity of the method and frequent good results should encourage its trial.

After one or more courses of conservative treatment have been tried and still the pain continues, operative fusion of the affected sacro-iliac or lumbo-sacral joints should be considered. The Smith-Peterson technique is most popular for the sacro-iliac joints and the Albee or Gaenslen technique for the lumbo-sacral. The patient is then immobilized for about two months and is then allowed up gradually. The results of operative spinal fusion have been uniformly good.

Several other less common injuries may have occurred which are not always easy to diagnose. They should at least be looked for, however.

It is very common to find anomalies of the lower spine such as sacralization of the fifth lumbar vertebra, spina bifida, and horizontal sacrum. The presence of such an anomaly does not mean that the symptoms are necessarily due to the anomaly. We do know, however, that the percentage of low back injuries is greater in those with such anomalies than in those without.

Spina bifida occulta, the type which does not show externally, usually requires no treatment. Sacralization of the fifth lumbar vertebra, when it is responsible for the pain, due to a rubbing of the transverse process upon the ilium may require removal. The horizontal sacrum, if congenital, requires no treatment other than correction of the posture and other obvious deformities if present.

Williams, in 1932, called our attention to a narrow intervertebral disc of the lumbo-sacral junction which sometimes resulted from a ruptured annular ligament of the disc or a rupture of the nucleus pulposus of the disc, thus permitting either a herniation of the fibro cartilage or a herniation of the nucleus pulposus into the bony substance of one of the vertebra. This narrowing of the joint space can usually be seen in the X-ray but not always at once after the injury. Such a narrowing of the disc causes a mechanical derangement which may or may not cause trouble. If the person can compensate for the derangement, he will have little trouble. A narrowed lumbo-sacral disc may change the angle of inclination of the lumbar fifth upon the first sacral and thus put new strains upon the surrounding ligaments because of an increased shearing stress in the joint. It may also cause a sprain, subluxation or dislocation of the fifth lumbar articular facets. Subluxation or dislocation of the fifth lumbar articulations if telescoped together, causes a diminution of the foramina for the large branch of the sciatic nerve which might then cause pain because of pressure. The foramen between the fifth lumbar and first sacral is the smallest of all those supplying the sciatic nerve—yet the largest branch of the nerve passes through it. Even a slight narrowing of this foramen might cause considerable pressure on the nerve and subsequent embarrassment. These facet dislocations may also occur independently of the disc injuries. The symptoms are the same, namely, local pain in the back and pain along the sciatic nerve. The X-ray is, of course, indispensable to diagnose these conditions. Occasionally there may be a fracture of one of the articular processes making up this joint. Only by an excellent roentgenogram showing exact detail can this be seen as the amount of separation of the fragments is always minimal. Good X-ray pictures *must* be insisted upon. A right and left oblique view of these facets is usually necessary to see them in profile.

Rupture of the nucleus pulposus first recognized by Schmorl may occur in any direction through the surrounding fibro-cartilage or into the bony vertebral substance. It sometimes ruptures posteriorly into the spinal canal and when the herniation is very large, may press upon the cord itself or upon the cauda equina lower down. Symptoms of this pressure upon the cauda equina are pain along the sciatic nerve and weakness of the lower extremities—sometimes bowel and bladder disturbances. The treatment is usually operative and consists of laminectomy and removal of the mass. Elsberg and Constable have reported 28 such cases which were successfully operated upon.

Two other conditions must be kept in mind in all lower spine injuries: Spondylolisthesis, or the forward slipping of the fifth lumbar vertebra on

the first sacral, and secondly, the posterior slipping of the fifth lumbar on the first sacral. Spondylolisthesis can not occur without a congenital defect or fracture of the structures making up the intervertebral facets or laminae. Most commonly the anterior dislocation occurs subsequent to a congenital defect of the laminae. Why or how the posterior dislocation occurs has not yet been proved. In spondylolisthesis or the forward displacement, the usual symptoms are some aching of the lower back, and increased lordosis or a step-off depression posteriorly and sometimes a weakness of the legs or radiation along the sciatic nerve. The symptoms usually vary in direct proportion to the degree of dislocation which might be hardly visible or might be complete. The posterior dislocation is always slight and the chief symptom pain. Again I wish to emphasize the necessity of excellent roentgenograms of the lateral lumbo-sacral spine for diagnosis.

Frequently one finds that the injured person has an existing arthritis of the spine—especially is this so in older people. The question then arises as to whether the symptoms are due to the arthritis, to an injury, or to a lighting up of the arthritic process. Any one or all three of these conditions might be present. Sometimes a bony spur of osteoarthritis can be seen to have fractured off. The determination of whether the symptoms are due to any one or all three of the above conditions does not alter the treatment appreciably but it is important for medico-legal reasons and if the case is an insurance case. The conservative treatment of the back sprains and of an arthritic process of the lower spine is much the same but in the presence of an arthritis the treatment is more likely to be prolonged. The greater difficulty lies in determining the percentage of disability to which the patient is entitled. The question is this: How large a part of the disability was caused by the pre-existing arthritis and how large a part did the injury cause? This must be decided on the facts in each case.

It is not my purpose to discuss other more serious injuries such as the fractures of the vertebral bodies and of the posterior and lateral spinous processes but it is obvious that these injuries also must be eliminated in making the diagnosis; however, they are usually more obvious and should cause no difficulty. Mild degrees of compression fractures of the vertebral bodies are sometimes missed and this one should keep in mind.

Other soft tissues in the region of the lower back may have been injured such as tearing of the erector spinae muscles, hematomas due to vessel injury, periostitis due to direct trauma, etc. These usually are easily detected and will therefore not be further discussed here.

The diagnosis of the above conditions other than the sprain group depends upon good X-ray pictures. It is well to have a straight A P view, a straight lateral, and left and right oblique views. If greater detail is necessary the suspected area can be focused upon more closely. Stereo pictures may help but are not indispensable. The treatment of the sprain group has already been considered.

For a narrow fifth lumbar intervertebral disc conservative treatment is best to begin with and consists of immobilization in a plaster cast followed by a corset and physiotherapy. If the pain recurs, it is best to advise spinal fusion to fix the joint permanently.

Where the intervertebral facets are dislocated, bed rest with traction on the lower extremities may be tried. If much displacement is present a manipulation consisting of a forcible flexion of the lumbar spine should be done and then followed by immobilization and traction, later a corset and physiotherapy. Where the dislocation is severe, causes nerve pressure and can't be reduced, operative removal may be necessary. Spinal fusion is the operation of choice in some old cases.

Spondylolisthesis responds to conservative treatment frequently consisting of bed rest and immobilization and subsequent support with a corset. An active working man, however, must usually have an operative fusion for a permanent result.

The posterior dislocation of the fifth lumbar vertebra may respond to rest, immobilization and physiotherapy, but in some cases spinal fusion must also be resorted to.

The fractured articular processes should do well if immobilized sufficiently long. If severely fractured or much displaced, removal is indicated to release nerve pressure.

In conclusion I should like again to emphasize that diagnosis in low back injury conditions is not easy and neither is the treatment. Great assistance to diagnosis and treatment can be obtained if:

1. A careful history is taken to determine the mechanism of injury.

2. A careful physical examination is made of the lower spine and ilium, including a neurological examination and rectal examination.

3. Good X-rays are taken in every case; anterior, posterior, lateral and oblique views.

4. Guarded prognosis is made as to the exact length of time required for relief.

Two main reasons why traumatic neurosis

occurs so often in low back injuries is failure to make an exact diagnosis and, secondly, inadequate, or too short a period of treatment. Especially in medico-legal cases or industrial accident cases should the possibility of traumatic neurosis be kept in mind. It is in this type of case that the factor of compensation so easily keeps alive in the patient the disability idea. For this reason it is more important than ever to diagnose the injury as exactly as possible and to treat the patient untiringly for several months if need be.

DIAGNOSIS AND TREATMENT OF ACUTE EMPYEMA

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EMPYEMA thoracis (empyema of the thorax) as the term implies connotes the presence of pus within the general pleural cavity or any part thereof.

The presence of such pus within the pleural space of necessity implies infection of this closed serous sac. Primary infection of the pleural cavity is as rare as a like occurrence within the peritoneal cavity. Pleuritis whatever may be the causative agent arises in general on the basis of a primary site of infection within the lungs although infection within other structures which border upon the pleural cavity or penetrating wounds of the chest wall may give rise to pleural infections. The commonest of the former causes are pneumonia, either lobar or lobular, lung abscess, especially those small subpleural collections of pus which easily rupture into the pleural cavity and which give little pre-existing evidence of their presence either on the x-ray film or by physical examination. Pleural infection may result from an inflammatory process within the peritoneal cavity or from a subdiaphragmatic collection of pus. Bacteria from such sites reach the pleural cavity either by direct extension or by way of the diaphragmatic lymphatics, but a subphrenic or liver abscess may point beneath the diaphragm and rupture into the pleural space. Occasionally pleuritis may occur during the course of septicemia and while it is altogether possible that pleural infection may arise directly as a result of bacteria circulating within the blood it is much more probable that even here empyema arises on the basis of a small subcortical lung abscess which breaks through the pleura into the pleural cavity.

It must be remembered when considering the subject of empyema that the pleural space is only a potential one and that normally the visceral pleura of the lungs is in contact with the parietal serous membrane covering the inner surface of the chest wall. However, once bacteria gain entrance to such a space the reaction is not unlike the response elicited from the other closed serous sacs under like conditions. At first the reaction is mainly exudative and a large amount of serous fluid may be poured out during the first 24 hours, but as the process grows older the fluid becomes cloudy and finally purulent. Fluid aspirated during the early periods is as a rule clear and smears of it may reveal only an occasional bacterium and a few cells, however the causative microorganisms may generally be obtained by culture methods. The cell of reaction in the pyogenic pleurisies is during the early stages the polymorphonuclear leukocyte, but as the inflammatory process becomes older they are gradually replaced by the monocytes and the mononuclear phagocytes.

The fluid increases until the height of the inflammatory process is reached, a time which varies with the causative agent (seven to ten days in the case of the pneumococcus, 14 to 21 days in the case of the streptococcus.) When the inflammatory process begins to wane exudation ceases, small quanities of the exudate probably absorb, the existing fibrin becomes organized, but complete healing is not possible, and, in the untreated cases, large amounts of pus may remain within the pleural cavity for a period of years.

The amount of fluid which will form within a pleural cavity is dependent upon numerous factors, namely: the size of the chest, the presence or absence of adhesions tending to encyst the effusion and the virulence of the infecting bacteria. When the pleural space is free from adhesions at the onset of infection the effusion may be large and the lung is collapsed against the mediastinum by the surrounding fluid. If the effusion is massive and the mediastinum is mobile the latter may be pushed well into the contralateral chest, as a result the contralateral lung is partially collapsed, the trachea is deviated and in part occluded and breathing is impaired.

If the empyema is left untreated nature follows several courses in an effort to drain the pocket. The collection of pus may rupture through the chest wall and point beneath the skin in the region of the nipple, giving rise to an empyema necessitatis. In other instances the empyema drains by rupturing into a bronchus and the pus is coughed up. Still again and probably more frequently a portion of the fluid is absorbed, the pleural surfaces become greatly thickened and the now purulent exudate tends to become pocketed into smaller areas. As time passes, the

exudate becomes sterile and the patient may go on for a number of years until death at last results from amyloid disease and inanition, the end results of massive chronic infections.

Except during epidemics of influenza and pneumonia empyema is more common in children. This of course is what might be expected when the frequency with which respiratory infections are met with in the child is remembered.

The symptoms of acute empyema are those of a severe infection coupled with respiratory embarrassment. As a rule there is a history of some preceding respiratory infection. However, this phase of the disease may be so slight as to be disregarded completely either by the patient or the parents. When a history of previous recent respiratory infection is present and if the physician has been in attendance during this period the diagnosis should not be difficult. The time of onset of the pleuritis varies with the causative agent. When the pleuritis follows a bronchial pneumonia due to the hemolytic streptococcus its onset is as a rule concomitant with the waning of the pulmonary disease. There may be no cessation of the fever and respiratory difficulty, and pain in the chest at a time when the patient should be improving may be the only clue to the presence of a starting pleural effusion. On the other hand, where the causative agent of the intrapulmonary lesion is the pneumococcus, the patient has generally become much better and the temperature has been normal for several days or a week before the temperature again rises suddenly and there is pain in the chest and generally increasing respiratory difficulty. When the empyema is due to other causes the sequence of symptoms necessarily depends upon the primary source of infection. At the onset, pain during inspiration is generally present, as the effusion becomes more marked the pain disappears due to the separation of the inflammed pleural surfaces by the fluid. As the fluid increases, the respiratory discomfort becomes more marked and at times dyspnea and cyanosis may be extreme. The temperature usually remains high and this is especially true in children.

The laboratory findings are those of an acute pyogenic infection. The white blood count may reach 25,000 to 30,000. When the pneumonia has been severe there may be marked secondary anemia. If the fluid intake has been poor, and this is more true in children, the urine may give positive tests for acetone and diacetic acid.

The x-ray is of great aid in making the diagnosis and especially in those cases where the empyema is encysted. In the ordinary garden variety of empyema, the x-ray films will show a complete clouding of the involved site with the displacement of the mediastinal contents toward the opposite lung; the degree of displacement being dependent upon the amount of fluid present and the mobility of the mediastinum. In cases where there is a bronchial fistula complicating the empyema, a fluid level will be seen in the x-ray film. One must remember that the presence of a fluid level in a case of empyema which has not previously been aspirated can mean only that there is a bronchial fistula present or that the causative agent is a gas forming bacteria, and, when the empyema has been preceded by definite pneumonia, the bronchial fistula is to be though of as the most likely cause of the air being present.

The physical findings are those of fluid within the pleural space. In early cases where inspiratory pain is still present a friction rub may be heard. When the fluid does not fill the general pleural cavity and is encysted, it may be rather difficult to make the diagnosis by physical examination alone. The diagnosis is proved by aspiration and the presence on smear and culture of pyogenic bacteria within the aspirated fluid. Those cases where the fluid is clear and where no organisms are found either on smear or culture must be strongly considered as being tuberculous in origin.

Since the time of Hippocrates, there appears to have been much debate as to the proper method of treatment of acute pyogenic empyema. The one point upon which all authorities seem to agree is that drainage should be instituted. As to the time and manner of such drainage there has been and still remains much disagreement. Evarts Graham[1] believes that open drainage at a time when the pleural contents are definitely frank pus is the procedure of choice. If such a method is used, the patient is kept comfortable during the period when the effusion is becoming purulent by aspiration, carried out as often as it is found necessary in the individual case.

On the other hand since the time in 1844 when Roe[2] first suggested it, the closed drainage methods have had periods of use and disuse. The proponents of this method argue that drainage can be established earlier, that the pleural cavity is kept closed and that suction can be applied if necessary to pull out the lung.

Dyrel Hart[3] has advocated the use of the so-called tidal drainage which is a closed syphon method. It is said to have the advantages of irrigation coupled with those of closed drainage. However, the apparatus is elaborate and irrigation

has not been shown to speed greatly, if at all, the recovery time in empyema.

From the standpoint of one who has used both methods, the author believes that each has its good points. Concerning open drainage it may be said that it is definitely a much simpler method of treatment. The tubes used are large enough to permit adequate drainage; there is better, more complete and more constant drainage of the empyema pocket because the tubes do not tend to clog. The patient can be permitted to be up and around as soon as his general well-being permits, and it is not necessary to wait for the empyema pocket to become fully closed. The lung tends to re-expand evenly without the formation of pockets which is one fault of the closed drainage method. Infection about the closed drainage catheter generally makes of it an open drainage tube in a relatively short time and the question in the minds of many is why bother with it at first.

Graham and Berck[4] have given the average time for complete closure of the chest wall following open drainage as five weeks and two days in a large series of cases. This, I believe, agrees favorably with most other methods. Heuer[5] has shown that the re-expanding lung when open method is used follows almost a numerical formula and that, from the original size, it is possible to calculate the approximate time of obliteration of the empyema pocket. Furthermore, and of great importance to the physician today, is that it is possible with the open method to have the patient out of the hospital in a much shorter time than with other methods for the dressings may be cared for in the home. However, if the open method is used several points must be borne in mind.

(1) The chest must be aspirated until the effusion is frank pus; otherwise, the opening of the pleural space is accompanied by great danger from mediastinal shift; (2) the empyema pocket must be drained at its most inferior point; (3) the tube must be left in until by measurement with sterile saline solution the cavity holds less than 5 c.c.

The closed drainage methods have distinct advantages in certain cases, namely: (1) Tension pneumothorax with accompanying empyema; here a high positive pressure is built up within the pleural space due to a bronchial fistula which allows the ingress but not the egress of air; (2) where the empyema is due to the broncho-genic saprophytes, which cause the patient to become extremely toxic at a time when open drainage is not yet advisable because of lack of mediastinal stabilization; (3) in some cases of empyema due to the hemolytic streptococcus where the patient is very toxic and the formation of a purulent effusion is low. (4) Children under two years of age not not tolerate open drainage well even though the pus aspirated is very thick, for the mediastinum is as yet too mobile and pleural thickening does not occur rapidly enough to stabilize it. Furthermore, children of this age, after a bout of pneumonia, are apt to have little reserve and must be handled carefully.

When the story is all told, empyema like any other surgical disease requires the exercise of medical judgment in every case. When it appears after the appraisal of all facts that one method of treatment is superior to another, then, naturally it becomes the procedure of choice. One cannot become too pedantic in dictating methods of choice. It is a good thing, I believe, for those treating such cases to remember the widely varying gross and pathological anatomy of empyemas, having as their causative agents different micro-organisms, for, as Heuer[6] has recently pointed out in a paper well worth reading, certain cases, such as the pneumococcus empyemas, should be treated as a localized abscess, whereas empyemas caused by other bacteria may require a vastly different method of treatment.

In a final analysis, it behooves all to follow certain rules based upon the experience of those whose knowledge of the pathological physiology of the pleural cavity is well founded. These are:

1. Do not widely open a pleural cavity for empyema until its contents are frank pus.
2. When the effusion is seropurulent and the patient is extremely toxic and in the judgement of the attending physician it is not well to wait, use the closed drainage method.
3. Drain all empyema cavities at their most inferior point.
4. Leave the drainage tube in place until the cavity by measurement holds less than 5 c.c.
5. Always remember that patients seldom die of uncomplicated empyema but of the diseases which complicate it.

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THE PAST AND THE FUTURE STATUS OF TYPHOID FEVER IN SOUTH DAKOTA*

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TYPHOID fever has been recognized for centuries but it was not until about 1880 that the exact cause of the disease was determined. The agents responsible for typhoid fever are bacteria, and there are at least three different kinds. Since the isolation of these organisms, great strides have been taken in the reduction of the number of cases as well as the number of deaths. But with all the knowledge as to the cause of the disease, its method of transmission and control, a considerable number of cases of and deaths from typhoid fever occur.

No attempt will be made to discuss in detail the methods of transmission and control of typhoid fever. However, there are a few facts regarding the prevalence of this disease in South Dakota and what it may be in the future if the people do not assume a different attitude and improve their sanitary surroundings, which are of significance.

In 1900 the death rate of typhoid fever was 35.8 per 100,000 in the United States. The number of cases was reduced yearly until, in 1910, the number of deaths from typhoid fever was 25,000, which represents approximately 250,000 cases for that one year. In other words, there was about one case in every 400 persons. Further reduction in the number of deaths from typhoid fever in the United States was reported yearly until in 1925 there were only eight per 100,000. In well organized communities typhoid fever is a rarity and few individuals know much about the disease. Unfortunately, in South Dakota the disease is well known. "From the standpoint of preventive medicine, it is proper to regard an outbreak of typhoid fever as a reproach to the sanitation and civilization of a community in which it is contracted."

Upon examination of statistics of typhoid fever in South Dakota, it will be noted that up to 1932 the case and death rates were less than the average in the United States. This, however, is unfortunate and has created a false sense of security among the public health and waterworks officials, as well as the general public. The data given in Chart I show the number of cases and deaths of typhoid fever as reported to the State Board of

*Abstract of a paper presented before the South Dakota Health Officers Association, October, 1934.

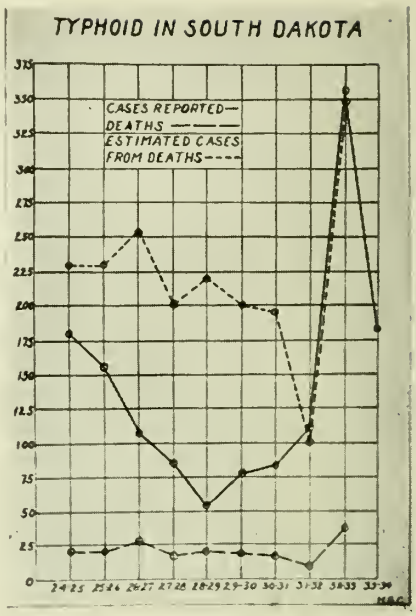


CHART I

Health for the ten-year period, 1924-1934. It will be noted that the average mortality from this disease until 1933 was approximately 23 per year. This would mean that there should have been about 230 cases per year, as it is generally regarded that about ten per cent of all cases die. From this chart, you will note that the number of cases reported to the State Board of Health was much less than the actual number of cases that should have occurred in this state. This shows either that health officers are not reporting all cases or that the death rate is higher than is generally regarded. The data which have been compiled from epidemics of typhoid fever in South Dakota, however, indicate that the average death rate of approximately ten per cent is correct. In 1932 there were reported only 111 cases and ten deaths. Comparing the prevalence of typhoid fever in South Dakota in 1932 with that of former years, it would appear that definite progress against the disease was being made. It is to be regretted that this is not the case. Typhoid fever is spread through the body discharges, feces and urine, and unless these are disposed of correctly and if the water and milk supplies are open to contamination, spread of the disease will continue.

The laboratory examination of municipal water supplies shows that approximately 40 per cent of them are contaminated, and are not suitable for domestic use. This does not mean that the typhoid germ is found in the water but that organisms are present which indicate the contamination of the supplies with the excreta of man or animals. So long as the water supplies are open to the con-

tamination by excreta, sooner or later the excreta from a typhoid patient or carrier will find its way into some unprotected supply.

A good example of this occurred in 1933 at Chamberlain. This was the largest typhoid epidemic that South Dakota has ever experienced and was one of the largest to occur in the United States for several years. In this epidemic there were 287 cases, with 30 deaths, and it was caused by the use of raw Missouri River water which was insufficiently chlorinated. Contrary to public opinion, the Missouri River water is unsafe and should never be used unless properly treated.

The State Board of Health has been criticized for permitting this epidemic to develop. This is an unjust criticism, as the State Board of Health has, for years previous to this epidemic, notified Chamberlain that its water was contaminated, and like many other cities in South Dakota, no attention was paid to this notification and recommendation and continued to furnish its citizens with an unsafe water. The State Board of Health has no authority to compel a city to furnish its citizens with safe water. Such authority should exist. The epidemic at Chamberlain could have been prevented had the city taken the advice of State Board of Health authorities which had been given them from time to time previously.

The future status of typhoid fever in South Dakota is based entirely upon the sanitary conditions that exist, together with prevalence of typhoid fever that normally exists. With the large number of water supplies contaminated, with practically no supervision of milk supplies, and with improper disposal of sewage, the number of cases of typhoid fever is bound to increase. It is an old axiom, with these conditions present, that the more typhoid fever we have the more cases we can expect. Chart II gives the number and location of the unsafe and suspicious water supplies in South Dakota as determined by laboratory

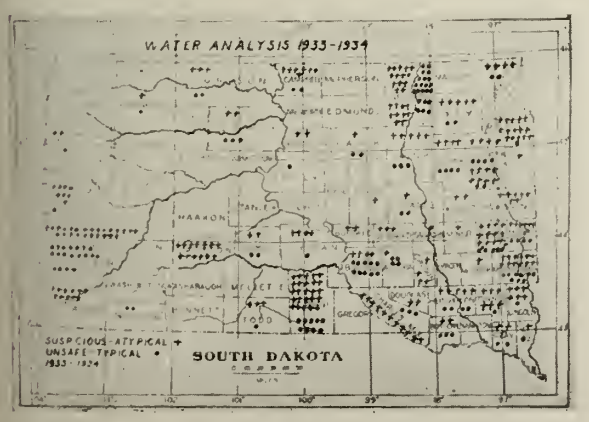


CHART II

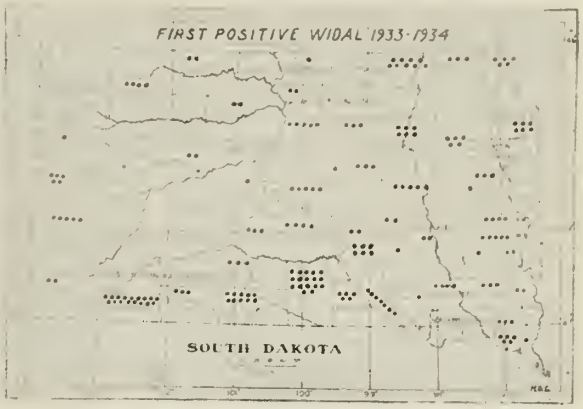


CHART III

examinations during the year 1933-34. Chart III gives the number and locations of typhoid fever cases for the year 1933-34, as determined by the first positive Widal tests. Comparing these two charts it will be noted that there is considerable correlation between the location of typhoid fever and polluted water supplies. It is not intended to show definitely that the source of these cases of typhoid fever are water-borne but to point out the danger of having more cases of typhoid fever through contamination of these water supplies. It would not be a surprise to see an increase of typhoid fever, with epidemics occurring here and there, at any time, especially if a rainy season should occur.

The citizens of South Dakota should be informed of the potential danger of this disease, and they should take an active interest in the sanitary conditions of their water and milk supplies, determining whether they are safe, and if not, immediately take steps to correct the conditions. Only by the improvement of sanitary conditions can the future outbreaks of typhoid fever be prevented in South Dakota.

CANCER OF THE GASTRO-INTESTINAL TRACT IN YOUNG ADULTS*

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I AM PRESENTING these three cases of carcinoma to bring again to your attention the possibility and the incidence of malignant neoplasms in young adults. It is true that most cancers, and therefore, cancer problems, are in those of the fourth, fifth and sixth decades, yet having seen three patients, aged: 30, 34 and 35

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†The Medical and Surgical Clinic.

years in my clinic practice in the last two years, I feel that a presentation of these cases is warranted.

Wilbur[1] of the Mayo Clinic, in examining the statistics of that institution then available, found that up to 1930 there were 250 cases of gastric cancer involving patients less than 40 years of age. Osler and McCrae reported that in 2% of the cases, the condition afflicts patients less than 30 years of age. Cheever[2] reported 183 cases of cancer of the colon from the Peter Bent Brigham Hospital, from 1913 to 1927. He found 7 cases of cancer of the colon between ages 21 and 30, and incidence of 3.8%; 14 cases between 31 and 40 years, or an incidence of 7.6%. In cancer of the stomach, he found an incidence of 1% between the ages of 21 and 30 years, and 8.4% between the ages of 31 and 40 years. Port and LeFevre[3] in 334 cases of cancer of the stomach, found 9 cases between 30 and 35 years of age, or an incidence of 2.7%. In 107 cases of cancer of the colon, he found 5 between the ages of 30 and 35, or an incidence of 4.6%. Raiford[4] reported 297 cases of cancer of the colon from the Johns Hopkins Hospital. Of these only 22, or 7.3%, occurred in the transverse colon, and of these 22, there was only one, a girl of 32, between the years of 30 and 35. Wough and Fisher reported 35 cases of cancer of the stomach. They found in their series three cases appearing before the ages of 30, and none between 30 and 35 years.

In going thru the files of St. John's Hospital, Fargo, N. Dak., I was able to collect 115 cases of carcinoma of the gastro-intestinal tract. These carcinoma were found in the stomach, small intestine, cecum, colon and rectum. Of these 115 cases there were: 56 cases of cancer of the stomach; 4 cases of cancer of the cecum; 8 cases of cancer of the transverse colon; 8 cases of cancer of the sigmoid and 22 cases of cancer of the rectum. The remaining 17 cases were of the appendix, small intestines and origin undetermined. Of the entire 115 cases, in only 5 instances did a malignancy occur between the ages of 30 and 35 years. This is an incidence of 4.3%, which agrees quite closely with other investigators. Of these 5 cases, 2 were in the stomach, 1 in the transverse colon, 1 in the sigmoid, and 1 a metastasis to the ileum from a cancer of the ovary. This incidence as to site corresponds fairly closely to the incidence reported by most investigators.

From these statistics we find that malignancy of the stomach, intestines and colon is comparatively rare in early adult life; still its incidence is sufficient to keep us on the alert, and should make us cancer-minded in the obstinate cases of unsatisfactorily explained gastro-intestinal symptoms.

Because of the wide variance of symptoms and findings, and the insidious course of the disease in many instances, I should like to report these cases in some detail.

Case No. I

Mr. G. W., A Chinese male appeared first at my office on January 27, 1932. His chief complaints at that time were: loss of appetite, weakness and loss of eight pounds in weight during the last three months. These symptoms had gradually come on during the past three months. At the onset, anorexia was the outstanding symptom, but he had absolutely no pain nor any abdominal distress. His bowels moved regularly, and at no time had he noticed tarry stools or fresh blood in the stools. There had been no nausea, vomiting, pain or distress associated with meals. He also gradually noticed that his "wind" was not so good, and exertion, that he formerly had been able to do without the slightest discomfort, now produced shortness of breath. About the same time he though his color was not so good and that he was a bit pale.

His systemic history with the exception of the symptoms mentioned above was entirely normal.

Physical Examination: Patient is a well developed and nourished white male. He is quite pale and is dyspnoeic. He is mentally alert. Head and face are normal. Nose, clear. Teeth, appear healthy. Tonsils, chronically infected. Pharynx, negative. Hoarseness, none. Tongue, smooth, but not painful. Thyroid, normal. Glands, none enlarged. Lungs, normal. Heart, normal, except for a simple tachycardia of 96 beats per minute. Abdomen, dome shaped, percussion note tympanitic, no fluid wave elicited, no masses or tenderness noted. Auscultation over abdomen revealed no abnormal peristaltic sounds. Extremities, normal, no piting edema, reflexes normal. Bone conduction, (tuning fork), normal. Rectal examination, external examination, normal. Prostate, normal. No masses made out. Genitals, normal male. Bones and spines, normal.

Laboratory Examination: RBC, 4,180,000. WBC, 7,850. Hemoglobin, 65%. Urine, normal. A small mass of stool was obtained from rectum, but microscopic and chemical examination for blood was negative.

A diagnosis of unexplained secondary anemia was made on the basis of low hemoglobin. He was put on a proper diet and iron in large doses. He was requested to appear again in two weeks,

but, at the end of that time, he called in and said he was feeling so much better that he did not want to incur the expense of further examination.

On July 13, 1932, he again returned to the office. At this visit the outstanding symptom was dyspnea. He had to stop half way up the stairs in order to get his breath. He felt very weak and dizzy. The symptoms had been gradually coming on over the past month, and steadily getting worse. On examination, the findings were essentially the same as on previous examination, except the air hunger was marked and the pallor was very noticeable. The tongue was smooth, and there was a questionable enlargement of the spleen. Bowels were a bit constipated.

Laboratory Examination—July 13, 1932: Hemoglobin, 25%. RBC, 2,200,000. WBC, 2,200. Blood Wassermann, negative. Stool specimen was again negative for blood. A fragility test of the red blood cells and a platelet count were normal. He had lost five pounds of weight, but showed no signs of cachexia.

There were absolutely no symptoms referable to the gastro-intestinal tract. He was advised to go to the hospital at once, as there was something seriously wrong. But again he preferred to try home treatment. He was then put back on the diet, given large doses of iron by mouth, and liver extract intramuscularly. He was watched along at home and gradually seemed to become better.

On the 29th of August his hemoglobin had risen to 53%. He felt stronger and his appetite was better. Still he had not complained of any gastro-intestinal distress. On the evening of this same day, he called by phone saying that he had suddenly felt worse, he felt very weak and dizzy.

On examination, he was found to be very pale, weak, dyspnoeic and complained of dizziness. This time he consented to go to the hospital. There his blood examination showed a hemoglobin too low to read with accuracy, and a red blood count of 1,900,000. The stool was saved and found to be tarry, and tested strongly for blood by the guaiac method. He stated this was the first time his stool had appeared thus, except when he was taking iron. Along with this he again had absolutely no symptoms referable to the gastro-intestinal tract. He was given two transfusions of citrated blood and then x-rayed.

A large infiltrating growth was found at the pyloric end of the stomach, and a diagnosis of cancer of the stomach was made. Operation was advised but this the patient refused, saying he wanted to go back to China and have it done. After he was told that he had a cancer of the stomach and was asked leading questions regarding distress and pain, he flatly denied any. He went back to China, and was operated at one of the Missionary Hospitals, where an inoperable cancer of the pyloris was found. He died from complications that came on during his convalescence.

Case No. II

Mrs. H. G. E., age 34, came to the clinic on September 3, 1932 complaining of fatigue and weakness. Her pregnancy two years before had terminated at the seventh month because of pyelitis. Since then she has felt quite well, although her strength never came back quite to what it was before. However, during this interval, she had gained 11 pounds. The past summer, however, she has felt quite run down and tired.

Systemic History—negative.

Past History—irrelevant, except for the pyelitis.

Physical Examination: Patient is a rather frail, tired, run down, white female, who looks older than her age. Eyes and sclerae, negative. Tongue, normal. Glands, negative. Lungs, negative. Heart, negative. Abdomen, flat, no visible peristalsis, no distension. On palpation, there is a suggestion of an elongated mass just to the right of the umbilicus. It is freely movable, and not tender. Reflexes, normal. Rectal examination, normal. There was stool in the rectum and some of this was examined for blood, but none was detected by the guaiac method. Pelvic Examination, negative. Vibration sense with tuning fork was normal. X-ray advised but were refused by patient as she did not have any abdominal discomfort and could see no reason for same. Patient was put on iron therapy.

Laboratory findings on admission: RBC, 2,990,000. WBC, 6,400. Hemoglobin, 50%. Blood pressure, 110/70. Sept. 16, 1932—Feels a bit better. Hbg., 55%. WBC, 22,500. Temperature, 99° F. Nothing was found to account for the increased white count. Urine was negative. Oct. 7, 1932—Hemoglobin, 58%. RBC, 3,840,000. WBC, 10,200. Weight, 130 pounds. Oct. 21, 1932—Patient feels much better. Hemoglobin, 75%. RBC, 4,130,000. Was unable to palpate any mass in the abdomen. Nov. 22, 1932—Weight, 134½ pounds. Hemoglobin, 63%. RBC, 3,240,000. Continues to feel well in spite of the fall in the blood. Urine today shows a 1 plus pus. Flat plate of the abdomen for kidneys, ureters and bladder was negative. She reported in regularly and nothing additional was made out.

In February she reported that her last men-

strual flow had been very heavy, and her family doctor had given her ergot to control the bleeding. However, at this visit, nothing unusual was made out.

On March 2, 1933, she entered the office, complaining of severe cramps and pain in the abdomen. She felt very ill and had been vomiting. She stated the pain had come on suddenly during the previous night, and so far had not abated. On examination, a long, tender, tense, tube-like mass was palpated. It seemed to arise from a point just above the symphysis, and extended upward and laterally to a point just below the right costal margin. The hemoglobin today was 40%, and the RBC, 3,100,000. Vaginal examination was negative. A diagnosis of obstruction was made and the patient sent to the hospital.

She was given a large enema and gas returned. Vomiting seemed to be abating so it was planned that an exploratory be done in the morning. Next morning, when she was examined, the vomiting had ceased and the patient was passing gas and fecal material per bowel. It was quite dark and tested strongly positive for blood. However, when the abdomen was examined, it was only with the most careful palpation that any mass could be made out.

On exploration, an annular carcinoma of the transverse colon just distal to the hepatic flexure was discovered. On opening the tumor, the cause for the sudden obstruction was readily determined. An hour-glass shaped mass of parawax was found impacted in the constricted portion, but it had manipulated around in such a way that a passage for the stream of fecal material was possible. Later, the patient told us that she had chewed wax a lot, and that she had swallowed some from time to time. There were metastases to the regional lymph glands and one suspicious area in the liver. The tumor of the colon was resected and anastomosis of the bowel made. Her convalescence was uninterrupted. The laboratory reported an adenocarcinoma of the colon.

July 10, 1933—Has been feeling very good. Appetite has improved as well as her strength. Hemoglobin, 78%. RBC, 4,430,000. There was no icterus, no palpable glands, nor any abdominal masses.

August 1, 1933—Weight 134 pounds, feeling fine. RBC, 4,300,000. Hemoglobin, 75%.

December 5, 1933—A diagnosis of four months pregnancy was made. Is feeling very fine. RBC, 3,800,000. Hemoglobin, 77%. WBC, 11,150. Weight, 148 pounds. Generally, patient appeared better than at any time.

January 2, 1934—Patient not feeling so well. Looks slightly icteric. Hemoglobin, 40%. RBC, 3,160,000. Urine shows bile. There is a mass palpable in the upper right quadrant, probably liver. It was felt that we were probably dealing with metastasis to the liver.

January 30, 1934—Emaciation appearing, feels very weak. Patient is definitely jaundice, and she now looks tired and weak. She steadily became worse. The sedimentation curve showed marked changes which we felt were due to the carcinomatous process in the liver.

April 13, 1934, she was delivered of a living female child. It seemed about 1½ months premature. The baby lived for five days, and died apparently of pneumonia. No autopsy was permitted. Immediately following delivery, a large irregular mass was made out that extended down from under the right costal margin to a level with the crests of the ileum. This was an irregular, nodular liver. Icterus also was marked. Her progress was now steadily down hill.

May 29, 1934, she was so markedly distended with the fluid that an abdominal paracentesis was done, and about 6,000 c.c. fluid removed. Following this she felt some better.

On July 1, 1934, she had evidence of partial intestinal obstruction. Examination revealed extreme dehydration and emaciation. The abdomen was filled with irregular firm masses. No free fluid was demonstrated. Patient gradually weakened, and died on July 22, 1934. Autopsy was not permitted.

Case No. III

Mrs. A. E., aged 28, a white, married female first consulted me on May 3, 1932, because of abdominal pain. This pain had been present intermittently for the past year. In this time it had not seemed any worse, that is, not coming any more often, and not being any more severe. The pain did not seem to be localized to any particular spot in the abdomen. When the pain was in the upper abdomen, food rarely made it any better, often making it worse. Baking soda never gave any relief; alkaline powders of soda bicarbonate, calcium carbonate and heavy calcined magnesia gave no relief; ulcer diet improved the pain very little. The pain never awakened her at night, but pressure in the epigastrium often gave relief. When the pain was located in the right lower quadrant, it was of a crampy, colicky nature. She had no nausea nor vomiting. The pains were not related to her menses. Patient tends to be somewhat costive and often uses mild laxatives.

Her family history was essentially negative, her father having died a few months ago of coronary

thrombosis, and her mother having died at the age of 26 of tuberculosis.

Her past history was irrelevant.

Systemic history, except for that related to the gastro-intestinal tract, was negative.

Physical examination revealed an asthenic, normally developed white female. Mental state, normal. Skin, clear. Head: eyes, ears and nose, negative. The tonsils were enlarged and cryptic, grade 2. Thyroid, normal. The heart was normal. Blood pressure, 115/75, and pulse 80 beats per minute. Abdomen was flat, with normal contour. No masses were found, although she was slightly tender over McBurney's area, with slight muscle guard. Extremities, negative. Neurological, negative. Rectal, negative. Pelvic examination, negative. Glands, negative. Bones and joints, normal.

Laboratory on admission: Urine, negative. Blood: RBC, 4,880,000. WBC, 10,000. Hemoglobin, 80%. Temperature, 98° F. Weight, 108½ pounds. Sputum on two occasions was negative for acid-fast organisms. Gastric analysis shows food well digested. Free hydrochloric acid, 50°; combined acid, 38°; total, 88°.

The gastro-intestinal tract was x-rayed, and no pathology made out. Patient was put on a milk diet with Sippy powders, with quite a bit of relief, but as soon as her diet was increased she again experienced the old discomfort. I then put her on a bland, low-residue diet, plus one-half teaspoonful of Metaphen 1-500 before meals. This, the patient stated gave her complete relief. As soon as she tried to get along on only a soft diet, the pain came back.

In May, 1932, an adherent thickened appendix was removed. At this time the surgeon explored the stomach and gall bladder, but there was no gross demonstrable pathology. This entirely relieved her lower right quadrant pain and to a much less, although not complete degree her upper abdominal pain.

About a month later, the patient developed broncho-pneumonia from which she made a complete recovery in three weeks. However, she was pretty well run down so she was advised to go to the lakes for the summer. There, in six weeks, her weight came up from 105 to 120½ pounds, and she stated she felt very well, although at times she would have spells of pain in the upper epigastrium. She continued to feel quite well, and in May, 1933, a diagnosis of pregnancy was made. Nothing unusual occurred, except that she was troubled a lot with nausea and vomiting in the early months of pregnancy.

In the last month she was troubled a great deal with nausea and vomiting, but no pain. She was finally delivered, in Januray, 1934, of a full-term, living, female child.

However, the nausea and vomiting persisted, and very soon we realized that we were dealing with some form of high obstruction. X-ray examinations revealed a filling defect in the stomach and cap, with reversed peristalsis. At operation, a carcinoma of the stomach was found. The mass had also invaded the duodenum, but whether or not this was primary or by direct extension, we were unable to say. A gastro-enterostomy was performed, and the patient made a normal recovery. In a few months, however, she began to show signs of weakness, and a large abdominal mass appeared. She also developed metastasis to the cervical glands, and finally to the vertebrae, (cervical), with loss of sensation and weakness of all extremities. Incontinence of the bladder, but not of the rectum, developed. She gradually grew weaker, and finally died on June 25, 1934.

An autopsy was performed. This showed a diffuse miliary-like metastasis to the lungs and pleura and to the cervical vertebrae. In the abdomen, a large mass involving the prepyloric area of the stomach, lesser curvature, and duodenum was found. The mass was removed in toto and sent to Dr. E. T. Bell of the University of Minnesota, who reported: "A scirrhosis cancer of the stomach with metastasis to lung, liver and neighboring lymph nodes."

Diagnosis

In Cases 1 and 2 anemia and weakness were the outstanding findings. Weight loss was not so marked. In case No. 1, gastro-intestinal symptoms were entirely lacking, even after the patient was told the nature of his disease. This case was just opposite in almost every way to those reported by Wilbur[1] in which he found present a mass, abdominal distress, but no anemia. In his cases as well as this case, cachexia was not striking. In case No. 2 gastro-intestinal symptoms were absent until there was obstruction by a foreign body. Thus there was not a great deal of diffenence in findings from that in case No. 1.

Case No. 3 is very interesting because of previous attempts and opportunities to diagnose some organic change in the gastro-intestinal tract. X-rays and gastric analysis were negative in spite of which her symptoms continued. At the time of appendectomy, no pathology of the biliary tract, stomach or duodenum was noted, although it is possible a small early tumor might have been missed. Certainly, after all of this, it would be the rule to label the patient as a neurasthenic.

With the advent of pregnancy, the signs were marked, and even the pronounced vomiting at the end of pregnancy could easily be accounted for by functional changes associated with pregnancy. However, the persistence of these findings after termination of pregnancy quickly enabled us to make the correct diagnosis. Furthermore, I believe the pregnancy stimulated the growth, as it most certainly did in case No. 2. Could it be possible the attack of broncho-pneumonia might not have been metastatic invasion of the pleura?

With all these varied clinical data, what must we then rely upon for an early diagnosis?

First, and most important, one must bear in mind the differential diagnosis, the possibility of an existing malignant condition, and it must be kept in mid until all findings and symptoms can be satisfactorily accounted for. There does not seem to be any typical picture and always the diagnosis, "neurasthenia," is a dangerous one. A secondary anemia is often present, although as mentioned before, in Wilbur's[1] cases where masses were palapable, anemia was absent. Nevertheless, the presence of a secondary anemia should put us on guard. Frequent examination of the excreta for the presence of blood is imperative, and once present, all efforts should be made to explain its occurrence. In this day and age, with the literature filled with the various types of anemia due to nutrition or lessened function of the hematopoietic system, one is apt to forget that the mild, secondary anemia may be due to the presence of ulceration or toxins of a malignant growth. This again emphasizes the necessity of determining the cause of anemia or presence of blood.

Happily, in the majority of the cases, among the first symptoms are those related to the gastro-intestinal system, such as pain, gaseous indigestion, sour stomach or food distress. In young adult life, dietary infringements most often account for these symptoms. However, if, with proper dietary regulation, the distress does not clear up, again that close search for other trouble must be undertaken. Loss of weight, slight elevation of temperature and anorexia can also be warning symptoms of a malignant process.

R. Schmidt,[8] in 1911, described two types of persons who were prone to develop carcinoma of the stomach; he termed these the dynamic and the adynamic type. The former were robust, active, heavy-eating individuals who developed the disease late in life. The adynamic type were thin, asthenic, chronic dyspeptics who developed the disease early in life, and incidentally these three cases fall in this group.

In early-adult-age cancer, Chuser found that 45% of his patients first complained of epigastric pain or distress, usually, but not necessarily, coming on after eating. In 11% belching of gas without special distress was noted. Nausea and vomiting were the first symptoms in 8.5%. Add to these the occasional patient who first complains of sour stomach, dysphagia or a mass in the epigastrium, and we find that in 75% of the cases the original symptoms from the start, point directly to the gastro-intestinal tract. The remaining 25%, however, who complain first of the general weakness and debility, loss of weight, constipation and pallor, backache, anorexia and general abdominal pain, constitute the group in which both physician and patient may be grossly misled, as to the cause and significance of the symptoms.

Again, it emphasizes the importance of being cancer-minded, and of a thorough, exacting search for the cause of the symptoms and findings. At this point it is well to evaluate the findings of gastric analysis. Too often no noteworthy change from the normal is present and is easily misleading. Smithies states that in gastric cancer, free hydrochloric acid is more apt to be present than absent. Fifteen of his 16 patients had an average of 26 degrees free hydrochloric acid. The presence of blood would be very important, and a search for cancer cells in the contents would be in order.

In the diagnosis of cancer of the colon, one must remember such a process of the right colon presents a very different picture from the left colon; and the transverse colon, a combination of both. In the cecum and ascending colon, the disease is very insidious, and obstructive symptoms appear only late, if at all, because the liquid fecal stream can always find its way along a very narrow lumen. After ulceration of the surface of the neoplasm occurs, the irritation may cause spasm and painful peristalsis, which express themselves as mild attacks of colicky pains. These have no definite relation to meals or to bowel movements. A sense of fullness and accumulation of gas is often complained of, since, as a rule, the diseased colon is irritable and often emptied. In appearance stools may be grossly normal, but if carefully followed, will show the persistence of small amounts of blood. Sometimes the irritability of the colon is propagated to the distal part of the bowel, causing a tendency to frequent, loose stools.

Physical examination often reveals nothing

except a vague and inconstant sensitiveness over the right colon, often with slight muscle spasm. Later, when the disease has become more advanced, a massive firm tumor may be felt which does not move on respiration, and which is more prominently felt anteriorly than in the lumbar region. X-rays are helpful if obstruction or irritability is present sufficiently to give altered contour of the gut. If this is evidence of obstruction, only a barium enema is permissible. The point to be remembered is that persistent discomfort and pain in the right abdomen, if unaccounted for by other causes, and, especially, if accompanied by gross or chemical blood in the stool, demands that an exploration should be advised.

Neoplasms of the left side of the colon present symptoms due almost solely to obstruction of the bowel lumen. A slight constipation is increased. Later, generalized colicky pains appear or a feeling of abdominal fullness and accumulation of gas sometimes precedes this pain which is relieved by a bowel movement. In comparison with similar cases in older adults their symptoms were more definite, and of greater intensity. A palpable mass was found early in all cases. Blood in the stool was prominent in carcinoma of the rectum. In colon cancer, hemoglobin averages 45%, while in rectal cancer, 64%. Raiford[4] noted an absence of free hydrochloric acid in many cases of cancer of the colon, although he does not mention anything specifically regarding his patient 32 years of age.

Pathology

The disease usually pursues a rapid course in young adults. Case 3 developed pulmonary lymphatic carcinosis, which is especially frequent in young adults. Ewing[7] states that a high proportion of the early cases appear to be adenocarcinoma. Fowler[6] reported 9 cases with gastric cancer under 26 years of age; clinically they gave a fairly good history of peptic ulcer; histologically they were rapidly growing adenocarcinomas. Eight of Smithies'[5] 16 cases of gastric cancer under 30 years of age were ulcero-cancers. This fact must be kept in mind when dealing with gastric ulcers in young adults. In case No. 3 the histological diagnosis was scirrhous carcinoma.

In cancer of the colon, the annular constricting form is most common. The early growth may appear as a small ulcer in the mucosal surface of the gut wall. The edges are hard and elevated, having a crater-like erosion in the center. As growth progresses, the ulcerated area extends around the bowel more rapidly than it does longitudinally, leading eventually to an annular growth. Extension to the mesentery may take place and involvement of the mesenteric glands is not rare, and does not seem to depend on the age of the process. The liver is particularly susceptible to metastasis and contains secondary growths in 27% of the cases. Extension to adjacent organs is common, particularly to the stomach. The microscopic picture is usually that of an adenocarcinoma. A large percentage shows mucoid degeneration and may originally be diagnosed as a colloid cancer. Medullary and scirrhous cancer may occur but are rare.

Treatment

In the treatment, the most important factor is early diagnosis and surgical intervention, if we hope to get any cures. The disease is a rapidly growing one with early metastasis. The mortality rate is high, but occasionally a cure results. Earlier diagnosis no doubt would improve the rate. Nevertheless, in the highly malignant forms, metastasis seems to be present by the time the earliest diagnosis can be made. In the hopeless case palliative surgery, x-ray therapy, and the use of hypnotics for control of pain is indicated. Undoubtedly when the dosage of x-ray can be more satisfactorily determined and the most favorable response of the cancer cells to the dose of x-ray determined, more benefit will be derived from x-ray therapy.

I believe the treatment of gastric ulcer in young adults is very important, since histological examination shows many of the gastric cancers arising on an ulcer base. I feel if gastric ulcer does not show prompt and satisfactory response to a properly regulated regime in a suitable time, resection of the ulcer should be made and careful histological examination made of the tissue for early cancerous changes. This procedure is offered as a prophylaxis against gastric cancer.

I also feel that repeated x-ray examination of the gastro-intestinal tract, say every six months, be made for at least two years, in cases of continued unexplained gastro-intestinal symptoms. Statistics showed that the duration of life from onset of symptoms to death was rarely over two years, and certainly with frequent x-ray examinations these lesions could be picked up early. If nothing is found at the end of two years, there is little likelihood of cancer developing.

Conclusion

1. Three cases of cancer of the gastro-intestinal tract between the ages of 30 and 35 years are reported.

2. The incidence of the disease is discussed.

3. Atypical and vague symptoms relating to

the gastro-intestinal tract may be the only danger signals that a malignant neoplasm is present.

4. Cancer should be considered in cases of unexplained gastro-intestinal symptoms.

5. A plea for exhaustive and frequent examination is made in cases of unexplained gastro-intestinal discomfort, to rule out cancer and to make as early a diagnosis as possible.

6. The pathology is discussed.

7. Successful treatment depends on early diagnosis and prompt surgical intervention.

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BOOK NOTICE

THE FAMOUS CRIPPEN CASE RE-TOLD

Doctor Moon, by CATHERINE MEADOWS; cloth, first American edition, 313 pages; New York: G. P. Putnam's Sons: 1935. Price, $2.50.

This work is based upon the case of HARVEY HAWLEY CRIPPEN, a famous case of thirty years ago in which unusual interest was evidenced by the medical profession because of the medical background of the murderer.

An English author, CATHERINE MEADOWS presents Doctor MOON as a drab, dispirited little physician who has forsaken active practice to become the London agent for an American patent medicine company. Miss MEADOWS writes in much the same vein (though not nearly so competently) as SOMERSET MAUGHAM'S *Of Human Bondage:* she pits MOON, a weakling, against his wife, FLORA, a worthless trollop. When MOON calls upon what he remembers of toxicology to do away with FLORA, the errors in his attempts to cover up the murder are fairly apparent to the alert reader.

The motives are logical, and the psychological situations forming the sequence to the crime are well-portrayed. The serenity of the author's style does much to instill a sensation of fatalism throughout the book.

ECONOMICS FOR THE DOCTOR

The Doctor's Bill, by HUGH CABOT, M.D.; first edition, cloth, gold stamped on black ink panel, 313 pages with diagrams; New York City: The Columbia University Press: 1935. Price, $3.00.

This book could be called a *tour de force* in dissection, because DR. CABOT cuts through the maze of economic controversy surrounding organized medicine today with the surgeon's impassiveness toward irrelevant details.

The author, who is a senior consulting surgeon at the Mayo Clinic at Rochester and former dean of the Faculty of Medicine in the University of Michigan, traces organized medicine from the year 1890, treats of our medical resources, discusses legislation affecting medical practice, describes what he thinks are our medical needs, and ends with a chapter called *Where Do We Go from Here?* There is an index and a good bibliography.

Because DR. CABOT has no axe to grind, and because he has written dispassionately about a highly-controversial subject, the book should be commended to every student of medical economics.

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HOLIDAYS

Vacation time is here and the doctor should plan a little well deserved rest. If he be young, he may combine travel with study and visitation of clinics where he will get inspiration from the work done by others. If he be older, he will seek a change of environment with appropriate activity of an entirely different kind and periods of complete and undisturbed repose.

Some there are who regularly take a week off throughout the year for recreation, and they testify enthusiastically to the benefits of such change. Attendance at conventions with suitable side trips also has its advocates and adds to pleasant memories and associations. Railroads and other transportation companies are offering many attractive round trip excursions to our national parks and other places of scenic beauty. In most cases the automobile affords the most practical and economic means of travel and permits of change in time schedule and itinerary without previous planning of details.

Road maps are to be had for the asking at any filling station. They certainly have a way of stimulating the *wanderlust*. How would it be to hang one or two on the office wall during the next few days and see what happens to that impulse.

A. E. H.

IODIZED OIL IN THE BRONCHIAL TREE

Since the splendid work of Pritchard (Radiology, 8:104, 1927) iodized oil has been used very extensively in diagnosis of conditions in the bronchial tree. It has also been found of considerable value in the treatment of some conditions, such as certain cases of bronchial asthma, chronic bronchitis, and bronchiectasis.

There are three principal kinds of iodized oil on the market, namely, lipiodol, with poppyseed oil base, lipoiodine, with sesame-seed oil base, and iodochloral, with peanut oil base.

A very simple method of administration consists of breaking the cough reflex by spraying or swabbing the pharynx and larynx with a 5 per cent solution of butyn or cocaine. With 10 cubic centimeters of the oil at body temperature, in a metallic syringe and an attached cannula, the oil is introduced just posterior to the root of the tongue. During this procedure the patient holds the tongue and is instructed to breathe fairly fast. If there is a desire to cough, he is instructed to take a few deep breaths. In this manner, an adequate amount of oil finds its way into the desired part of the bronchial tree.

Just why iodized oil is beneficial in the treatment of certain bronchial conditions has been a subject of considerable discussion. It is thought to serve as a coating of the lining of the bronchial tree, and, thus, protects it from inhaled dust which may cause mechanical irritation or from

substances in the air to which the patient may be allergic. It is also believed to serve as a lubricant to such an extent as to prevent plugs of mucous from obstructing parts of the bronchial tree. Iolized oil is heavier than the mucous and other material present in the bronchial tree in bronchitis, asthma, bronchiectasis, etc.; therefore, it gravitates to the most dependent parts and displaces the material already present, which is easily coughed up and expectorated. Thus, one eliminates much infected material and prevents absorption of toxins.

The idea that iodized oil has a germicidal effect has been quite definitely disproved. Because iodine can usually be found in the urine a few hours after the oil has been administered and for several days thereafter, it was thought to be absorbed through the walls of the bronchial ramifications, and, therefore, might destroy pathogenic micro-organisms. Balyeat and Seyler (Journal-Lancet, 54:563, 1934) performed experiments on animals, which showed that iodine is not absorbed through the bronchial walls but that absorption takes place through the gastro-intestinal tract from the oil that is swallowed during its administration or coughed up into the pharynx and swallowed soon after. Inasmuch as it is almost impossible to prevent the swallowing of some oil and it is difficult to determine just how much has reached the gastro-intestinal tract, it is good practice to give each patient a dram of magnesium sulphate immediately following the treatment; otherwise the oil reaching the intestinal tract may liberate iodine with sufficient rapidity to result in iodism.

In diagnostic work or in the treatment of such conditions as generalized bronchitis, one should never attempt to introduce oil into all parts of the bronchial tree on the same day, since it is possible to produce fatal edema in this manner.

Because iodized oil is so easily administered and in some cases gives such spectacular results, and at the same time is without harm to the patient, it deserves a trial by all physicians treating patients with bronchial conditions which do not respond to the usual methods of treatment.

J. A. M.

PATRIOTIC FURY

This is a great, glorious, free and liberty loving country; so great in fact that we have found it necessary to set aside a day each year on which to sacrifice the lives of some of our citizens as so many burnt offerings on the altar of frenzied patriotism while attendant acolytes suffer loss of sight and mutilation of limb as they vie in delirious hilarity to prove our eminence by oratory, martial music and pyrotechnics. And after all the proclaiming, what?

Doctors may teach, warn and preach but explosives will be used every 4th of July and someone will always get hurt. There remains but one clear duty then for the doctor, and that is to uphold the greatness and the glory of modern science in the treatment of these cases. While others shoot fire crackers, he must be prepared to shoot tetanus antitoxin. A. E. H.

SCURVY OR BOTULISM?

When the troops first came to Minnesota to establish an army post they spent the first winter in temporary quarters near the site of the village of Mendota. The food conditions were very difficult and unsatisfactory. Green vegetables and fresh meat were rare, expensive luxuries. Most of the time the little command had to depend on semi-spoiled salt pork brought in barrels by boat from Saint Louis and the bread was often sour and mouldy. "During the winter of 1819-20 the scurvy broke out in most malignant form, and raged so violently that, for a few days, garrison duty was suspended, there being barely well men enough in the command to attend to the sick, and to the interment of the dead. So sudden were the attacks, that soldiers in apparent good health when they went to bed, were found dead in the morning. One man who was relieved from his tour of sentinel duty, and stretched himself upon the bench of the guard room, four hours after, when he was called upon to resume his post, was discovered to be lifeless."[2]

One hundred and sixteen years ago, when this occurrence took place, scurvy was the only disease known to be associated with bad dietary conditions, and it is not at all surprising, under these circumstances, that when an outbreak of severe illness happened in connection with the use of bad food over a prolonged period of time it was supposed to be a form of scurvy; indeed, some authors went so far as to attempt to differentiate "land" scurvy, which was supposed to be the more acute form, from "sea" scurvy which ran the slow course of the deficiency disease which we know today and which has been known for ages as a condition which sets in when fresh vegetables were omitted from the diet for protracted periods. This latter is, of course, the only form of scurvy we recognize today. There is no such thing as an acute form, and what happened at Mendota in 1919-20 must have been something else. Could it have been anything but botulism?

2. Sibley, H. H.: "Reminiscences Historical and Personal," Minnesota Historical Society Collections, Vol. I, p. 386, 1850-1856.

The bad food, the sudden onset and the high death rate after brief illness are all very suggestive. There is an uncanny similarity between the details of the Mendota outbreak and those which prevailed in an English outbreak which took place at Welbeck in 1880 and now definitely assigned to food poisoning by Scott[1]. In neither instance can proof be forthcoming, since the bacteriology of food poisoning is of much later date, but reasoning by exclusion we can at least say with certainty that if the Mendota outbreak is correctly described in the accounts of Sibley and others it was not scurvy. It bears all the earmarks of an acute intoxication, and of all the possibilities, clostridium botulinum contamination seems the most likely. G. C.

1. Scott, H. Harold: "Some Notable Epidemics," London; Edward Arnold and Company, pp. 199-211; 1934.

DR. HELEN HUGHES HIELSCHER

In the death of Dr. Helen Hughes Hielscher, Mankato, Minnesota has lost one of its finest and most useful citizens. The story of her busy and unselfish life is a continuous revelation of her unlimited capacity for doing good. One has but to enumerate some of the many activities which engaged her interest to appreciate how broad and how valuable her influence has been.

Aside from the fact that Mrs. Hielscher was one of the first women physicians in Minnesota, her pioneering initiative brought her forward as a guiding spirit in the broader sphere of humanitarian and social service. Although the first fruits of her labors were felt in her home community of Mankato and Blue Earth county, they also accrued to the benefit of the whole state. Her example and her leadership made the work she was doing of something more than local significance. In view of her services it was entirely fitting that she should be the first woman member of the state board of health.

In company with her sister, Dr. Jane Hughes Sullivan, Mrs. Hielscher organized the first maternity hospital in Mankato. It was under the direction of Mrs. Hielscher that Blue Earth county founded its welfare association, the first independent organization of its kind in Minnesota. This pioneer work was well planned and in addition to the usefulness of this organization to Blue Earth county, the example she and her community set was widely followed.

During the war Mrs. Hielscher was active in the home service department of the Red Cross and following the war she continued this interest through her active work in aiding the rehabilitation of the returning soldiers. Her activity in this field resulted in another major accomplishment, namely the organization of the women's auxiliary of the American Legion. Mrs. Hielscher organized the Minnesota American Legion auxiliary, which was the first state organization, and she was its first president. She presided at the first national convention of this body and was an active force in its organization, and played an important part in its rehabilitation work. In the work of her church, particularly through the National Council of Catholic Women, she was ever faithful and untiring.

Her active life and her broad interests brought her in contact with the life of her community and her state in many of its phases and everything she touched felt the benefits of her goodness. Possessed of a fine idealism, a resolute character and an unselfish desire to better the lot of her fellow men, Mrs. Hielscher leaves behind her the record of a life that is rich both in service and attainment.

MINNESOTA STATE MEETING
Special Attractions

E. C. KENDALL TO DISCUSS SUPRARENAL CORTEX HORMONE

E. C. Kendall, Ph.D., biochemist of the Mayo Foundation, who is responsible for the isolation of the vital hormone of the suprarenal cortex, will enlarge upon the subject on Thursday morning, June 27, at 10 o'clock in Plummer Hall, at Rochester, Minnesota. This meeting is the section on medical science of the American Association for the Advancement of Science.

HENNEPIN COUNTY SOCIETY TO PRESENT WILLIAM P. MURPHY, M.D.

Dr. William Parry Murphy, instructor in medicine in the Harvard Medical School, and joint winner of the 1934 Nobel prize in medicine, will speak at the Minnesota State Medical Association meeting at the Minneapolis Auditorium, Tuesday morning, June 25, under the auspices of the Hennepin County Medical Society. Dr. Murphy will discuss his work in using liver extract in the treatment of anemia.

DR. SEVRINGHAUS TO SPEAK ON ENDOCRINOLOGY

Dr. Elmer L. Sevringhaus, associate professor of medicine in the University of Wisconsin School of Medicine, and co-editor of the yearbook volume, *Neurology, Psychiatry and Endocrinology*, will discuss "Endocrine Therapy" on Tuesday afternoon, June 25, at 3 o'clock in the Minneapolis

Auditorium. This will be a joint session held in conjunction with the American Association for the Advancement of Science.

PHYSICIANS' HOBBY SHOW

An exhibit of the products of the physician's spare-time hours will be held in a special room of the Minneapolis Auditorium during the eighty-second annual meeting of the Minnesota State Medical Association. The hobbies, which represent all sections of the state, have been made entirely by physicians, and include pipe collections, firearms, trout flies, old coins, stamps, art work, photography, wood carving, etc. This room will be locked each night, because of the intrinsic value of its contents.

MINNEAPOLIS SURGICAL SOCIETY SPONSORS FOUR SPEAKERS

The Minneapolis Surgical Society will sponsor the appearance of Dr. Frank Lahey, of Boston, Mass.; Dr. Thomas Orr, of Kansas City, Mo.; Dr. Edmund Andrews, of Chicago, and Dr. Harry Alexander, of St. Louis, Mo. Dr. Lahey will speak on "Hyperthyroidism and Hyperparathyroidism"; Dr. Orr will discuss "Venoclysis"; Dr. Andrews will speak on "The Pathogenesis of Gall Bladder Disease," and Dr. Alexander's subject has not yet been announced.

AMERICAN PHYSICAL SOCIETY TO PRECEDE CONVENTION

Minnesota physicians may attend the meetings of the American Physical Society, if they so wish, which will meet on the campus of the University of Minnesota on June 21 and 22, so that members of the society may remain for the A. A. A. A. convention which convenes on June 24. This society is headed by Robert Williams Wood, A.B., Ph.D., LL.D., professor of experimental physics in the Johns Hopkins University at Baltimore, Maryland. There will be a symposium on June 22 at the University on nuclear physics, at which four papers will be read.

WOMEN'S STATE AUXILIARY TO MEET DURING MEETING

The Women's Auxiliary to the Minnesota Medical Association has planned a number of interesting sessions scheduled during the 82nd state meeting of the physicians. The sessions will be held at the Minneapolis Women's Club, 410 Oak Grove Street, the Minneapolis Institute of Arts, 24th Street between Stevens and 3rd Avenue South, and the Minikahda Country Club, on the west shore of Lake Calhoun. On Tuesday evening, June 25, an annual dinner with entertainment will be given with the Hennepin County Medical Society and Auxiliary as joint hosts. Mrs. Martin Nordland is president of the state auxiliary.

CLINIC ON THYMUS AND PINEAL GLAND EXTRACT

Dr. Adolph Hanson, of Faribault, Minn., who gained national repute in medical circles as an endocrinologist by virtue of his work on the thymus and pineal gland extracts last fall at the Interstate Post-graduate Medical Association, at Philadelphia, will present a motion picture film of his same studies on the opening day, Monday, June 24, of the Minnesota State Medical Association meeting in the Auditorium. Dr. Hanson will participate in a clinic to be conducted by physicians from the University of Minnesota School of Medicine. He will use rats to show how extract from the thymus glands of calves will speed up the maturing process in immature animals.

SOCIETIES

ELEVENTH ANNUAL CONFERENCE of THE MINNESOTA HOSPITAL ASSOCIATION

June 20, 1935—Hotel Duluth, Duluth, Minn.
June 21, 1935—Lutsen Resort, Lutsen, Minn.

The following are invited to attend: Hospital Administrators, Hospital Trustees, Nurses, Nurse-Anesthetists, Record Librarians, Dietitians, Laboratory Technicians, X-Ray Technicians, and all others interested in hospital work.

1935 PROGRAM
Hotel Duluth, Duluth, Minn.
THURSDAY, JUNE 20
Morning Session

9:00—Registration—Ball Room Floor.
9:30—Opening Session—President, Mr. J. H. Mitchell, presiding.
Invocation—The Rev. Lawrence A. Glenn, Director of Bureau of Charities, Diocesan Superintendent of Catholic Hospitals, Duluth, Minn.
Address of Welcome—Mr. Harry W. Clark, President, Chamber of Commerce, City of Duluth.
Resume of Committee Reports:
1. Nominating Committee—Mr. Roy Watson, Chairman, President, The Kahler Corporation, Rochester.
2. Appointment of Tellers.
3. Constitution and Rules—Mr. H. B. Smith, Chairman, President, Northern Pacific Hospital Association, St. Paul.
4. Economics—Dr. Chas. E. Remy, Chairman, Superintendent, Minneapolis General Hospital, Minneapolis.
5. Insurance—Mr. Harry Brown, Chairman, Superintendent, Northwestern Hospital, Minneapolis.
6. Legislation—Mr. A. G. Stasel, Chairman, Superintendent, Eitel Hospital, Minneapolis.
7. Membership—Dr. A. F. Branton, Chairman, Superintendent, Willmar Hospital & Clinic, Willmar.

8. Nursing—Sister Anna Bergelund, Chairman, Superintendent, Deaconess Hospital, Minneapolis.
9. Program—Mr. Victor Anderson, Chairman, Manager, Abbott Hospital, Minneapolis.
10. Public Relations—Mr. J. G. Norby, Chairman, Superintendent, Fairview Hospital, Minneapolis.
11. Sanatorium—Dr. Geo. H. Freeman, Chairman, Superintendent, St. Peter State Hospital, St. Peter.

Open Discussion of Reports.

11:00—Round Table Conference—Hospital Problems.
Jury Panel Discussion—Mr. J. G. Norby, Chairman.
Round Table Discussion—(Members are invited to submit questions in writing for discussion.)

12:15—Luncheon—Ball Room, Hotel Duluth—Mr. J. H. Mitchell, presiding.
Introduction of guests.
Address—"Outstanding Accomplishments by the American Hospital Association," Bert W. Caldwell, M.D., Executive Secretary, American Hospital Association.
Address—"What Successful Hospitals Are Doing to Overcome Their Difficulties," Malcolm T. MacEachern, M.D., F.A.C.S., Director of Hospital Activities, American College of Surgeons.

Afternoon Session
Hotel Duluth

2:00-3:00—General Session—Ball Room—Peter Ward, M.D., Vice-President, presiding.
"Uniform Accounting Practices in Hotels"—Mr. Ralph Hitz, President, National Hotel Management Co., New York. Presented by Mr. F. M. Thudson, C. P. A. Controller of National Hotel Management Co., Inc., President, Hotel Accountants Association of New York City.
"Uniform Accounting Practices As Applied to Hospitals"—Mr. L. J. Byers, Certified Public Accountant, St. Paul.
Discussion—Mr. A. G. Stasel, Superintendent, Eitel Hospital, Minneapolis.

3:00-3:30—"Modernizing and Improving Old Buildings at Small Cost"—Mr. E. W. Buenger, Architect, Ellerbe & Co., St. Paul.

3:30-4:30—Round Table—"Rural Hospital Problems." Conducted by Dr. A. F. Branton, Superintendent, Willmar Hospital & Clinic, Willmar. (Written questions should be given to Dr. Branton or placed in the question box at entrance.)

4:30—President's Address—Mr. J. H. Mitchell, President, Minnesota Hospital Association.

Evening Session

6:30—Banquet (Informal)—Ball Room, Hotel Duluth—Mr. J. H. Mitchell, presiding.
Introduction of guests.
Address—"What is the Future of the Voluntary Hospital," Mr. Robert Jolly, Superintendent, Memorial Hospital, Houston, Texas; President, American Hospital Association.
Response—Margaret Culkin Banning, Duluth.

FRIDAY, JUNE 21
Lutsen Resort, Lutsen, Minn.

Morning

Drive to Lutsen—Follow Highway No. 61 north 90 miles to Lutsen. (Those desiring transportation and those having accommodation for extra passengers kindly leave name at registration desk.)

12:00—Luncheon—Lutsen Resort—Mr. J. H. Mitchell, presiding.
Address—"Raising the Standard of Hospital Administration," Mr. Robert Neff, Administrator, University of Iowa Hospital; President, American College of Hospital Administrators.

Afternoon Session

1:30—General Session—Mr. J. H. Mitchell, presiding.
Report of Treasurer—Rev. W. Merzdorf, Superintendent, St. Lucas Hospital, Faribault, Minn.
Report of Auditing Committee—Mr. Walter H. Lundahl, Chairman, Business Manager, Glen Lake Sanatorium.

2:00-3:00—"The Problem of Caring for the Community Sick"—Fred Carter, M.D., Superintendent, Ancker Hospital, St. Paul.
Discussion—
Hugh Cabot, M.D., Mayo Clinic, Rochester, Minn.
F. O. Hanson, D.D., Superintendent, Swedish Hospital, Minneapolis.

3:00-4:30—"Sanitarium and State Institution Section"—Conducted by Geo. Freeman, M.D., Superintendent, St. Peter State Hospital, St. Peter.
"The Place of Mental Hygiene in the General Hospital Program,"—L. R. Gowan, M.D., Duluth.
"The Tuberculosis Problem in Hospital Administration," H. A. Burns, M.D., Superintendent, Ah Gwah Ching, Minnesota State Sanitarium.
"A Special Study in Comparison of X-Ray Film and X-Ray Paper," Alfred B. Green, M.D., B.Sc., R.T., Glen Lake Sanatorium, Oak Terrace, Minn.
Open Discussion.

4:30—Business Section.
Report of Tellers.
Report of Resolutions Committee—Mr. J. J. Drummond, Chairman.
Other Business.

Evening Session

6:30—Dinner—Lutsen Resort—Mr. J. H. Mitchell, presiding.
"St. Louis County Plan for Medical Relief," W. A. Coventry, M.D., President, Minnesota State Medical Association.
Installation of New Officers.

8:00—Fireside Program.
"Minnesota Arrowhead Country," S. Valentine Saxby, Secretary, Minnesota Arrowhead Association, Duluth.
"Reminiscences," John A. Bardon, Superior, Wis., and Chief Mike Flat.

MEETING
of the
NURSE ANESTHETISTS OF MINNESOTA
Hotel Duluth
THURSDAY, JUNE 20
Program
Morning Session

9:00—Registration—Ball Room Floor.
9:30—Joint Session with Minnesota Hospital Association—Ball Room.
12:30—Joint Luncheon—Minnesota Hospital Association—Ball Room.

General Session—Afternoon

2:00—Miss Ruth Bergman, R.N., Mounds Park Hospital, St. Paul, presiding—Pompeian Room.
Address of Welcome—A. F. Branton, M.D., Superintendent, Willmar Hospital & Clinic.

"Cardiac Cases in Relation to Anesthesia," S. H. Boyer, M.D., Duluth.
Open Discussion.
"Diabetes in Anesthesia," F. J. Hirschboeck, M.D., Duluth.
Open Discussion.
Business Session.

MEETING
of the
RECORD LIBRARIANS OF MINNESOTA
and
THE HEAD OF THE LAKES RECORD LIBRARIANS ASSOCIATION

THURSDAY, JUNE 20
Hotel Duluth

Morning Session

9:00—Registration—English Room.
9:30—Attendance at Minnesota Hospital Association Meeting.
12:30—Luncheon with Minnesota Hospital Association.

General Session—Afternoon

2:00—Presiding—Sister M. Patricia, O.S.B., Superintendent, St. Mary's Hospital, Duluth; President, H. L. R. L. A.
Address of Welcome—Mr. J. H. Mitchell, Superintendent, Colonial Hospital, Rochester; President, Minnesota Hospital Association.
2:30—Organization Meeting Conducted by—
Halbert L. Dunn, M.D., Director, Minnesota General Hospital.
Dr. M. T. MacEachern, Associate Director, F. A. C. S.
Mrs. Edna K. Huffman, R.R.L., President, A. R. L. N. A.
3:30—Round Table (questions to be submitted)—Leader, Mr. Robert Jolly, President, American Hospital Association; Superintendent, Memorial Hospital, Houston, Texas.
9:00—Boulevard Ride—Refreshments, St. Mary's Hospital.

MINNEAPOLIS SURGICAL SOCIETY

ANNUAL SYMPOSIUM ON MALIGNANCY

Held in the Hennepin County Medical Society Auditorium, Thursday, April 4, 1935

(*Continued from June 1st Issue.*)

Metastasis may be late, but usually it is early. The route by which it occurs is primarily through the blood stream, less frequently by way of the lymphatics; invasion of the thyroid veins within the goiter itself has been described along with the release of emboli directly into these veins, metastatic growths reaching primarily the lungs, and secondarily the skeletal system, liver, kidneys and intestines. Frequently it is the case that metastasis dominates the picture while the primary focus remains relatively latent. Pulmonary metastasis often leads to erosion and perforation of blood vessels resulting in hemorrhages, pleural effusions, and so forth. These conditions may be confused with tuberculosis.

Sarcoma of the thyroid may occur in young individuals the same as it does in other locations of the body. According to most investigators, sarcoma, and likewise carcinoma, arises in about 90 per cent of cases in a pre-existing nodular goiter, usually in an individual in the fifth and sixth decades. As long as the growth remains inside the capsule no symptoms are produced, so the exact time at which the malignancy begins cannot be determined. Pre-malignant conditions likewise are difficult in evaluation since they may exist for a long period and the exact time of their metamorphosis into malignant lesions cannot be determined. The goitrous enlargement is the only symptom of which the patient is aware.

Thyroid malignancy is suspected, then, because of a firm, hard discrete type of tumor in the thyroid gland, because of recent growth, either slow or rapid, and because of secondary evidences of pressure such as difficulty in swallowing and breathing, and hoarseness. Thyroid malignancy soon leaves the normal contour of the thyroid gland to grow in an irregular and unrestrained manner and to become adherent to adjacent structures. In a few cases, the presence of large lymph nodes near the goiter is suggestive of the presence of malignancy. In rare cases bone metastases may be the first indication of the presence of malignancy in an apparently benign adenoma.

Treatment

In many instances operations are undertaken for a supposedly benign adenomatous goiter only to find that by immediate microscopic examination or by recurrence of the lesion at a later date, that enoplastic change had already taken place. Needless to say it is in these cases that are not diagnosed clinically that the best results may be expected. This fact, however, is dependent upon the pathologist making a thorough search and reporting the presence of malignancy at the time of operation. Extension of the growth through the thyroid capsule, as evidenced by fixation of the gland, lymph node involvement or metastasis, usually precludes the possibility of cure of resection of the mass. When metastasis occurs, the incidence is in the following order: Chest, bones, pelvis, clavicle, sternum, ribs, skull, knee, spine and abdomen.

In the prophylactic removal of adenomata of the thyroid gland lies the greatest hope of cure of malignant lesions, since about 90 per cent of all these neoplasms occur in pre-existing nodules. After malignancy has been diagnosed, the treatment of choice is radical resection, and if this is impossible irradiation alone or combined with surgical removal is strongly indicated.

In early cases in which the carcinoma is confirmed within the capsule, removal of all of the growth without rupture of the capsule is sufficient. If there is no definite encapsulation, total removal of the affected lobe must be done. In still later cases, even though the growth is fixed, complete extirpation with subsequent irradiation should be done. At exploration, if the growth is found to be inoperable, radium needles may be buried in the tumor. These are attached to silk threads so that the surgical wound may be closed and the needles removed aseptically after the specified time has elapsed. In addition, a large rubber drainage tube should be left in the wound so that radium on a lead stem may be inserted into the depths during convalescence. In inoperable cases, supplementary treatment is usually necessary, consisting of checker-boarding the region of the thyroid gland and applying radium in a mild erythema dose. High voltage roentgen ray treatment may also be used as a supplementary measure. By this method of treatment Pemberton and Fricke have effected a goodly percentage of cures.

Summary

In summary, it may be stated that surgery alone in this condition is usually not justifiable, even if the malignant lesion is entirely removed, although in many instances radical resection has proved to be a satisfactory procedure. The latter is especially true of the papillary adenocarcinomata which grow slowly, and tend to remain encapsulated for a long time. In the more malignant types, radiotherapy certainly offers additional protection against the extension of the disease. Trachectomy is frequently necessary, especially in the later stages of the disease, as a palliative measure.

The prognosis of carcinoma of the thyroid has been shown by Pemberton and Fricke and others to be as good as that of similar lesions of any other organ with the exception of the lip and the skin. Of 323 cases treated by them with a combination of surgery and irradiation, five-year cures were effected in 43.9 per cent. Twenty per cent of these individuals lived ten years.

MALIGNANCY OF THYROID

Discussion of Dr. Nordland's Paper

Dr. Charles R. Drake

THIS subject is perhaps best discussed under the two phases: (1) Occurrence and Pathology; (2) Treatment.

(1) Thyroid malignancy is not of frequent occurrence. In various clinics and statistics the figures of occurrence vary from .5 to 3 per cent of all thyroid diseases considered. In the past twelve years at the Swedish Hospital (although the record is somewhat incomplete), out of 1,980 surgical and medical cases treated, at least ten malignancies were definitely found, either clinically or microscopically. I presume that all thyroids with definite nodules are potential malignancies, but all nodules are of necessity not sectioned because many thyroids have a large number of nodules or areas that might show malignancy but are overlooked in sectioning.

The pathology of malignancy of the thyroid is to say the least rather obscure. The microscopic picture is often not clear at all and is the subject of considerable controversy; especially is this true of the exact differential diagnosis between sarcoma and carcinoma. Ewing says: "Notwithstanding the wide acceptance of numerous reported cases as sarcoma of the thyroid, there is a strong reason for believing that the great majority of these tumors are of epithelial origin. It is clear that the diagnosis of sarcoma has usually been accepted on the most superficial resemblance to a mesoblastic tumor, and without any effort to critically interpret the structure and origin. Hence many authors have recognized the uncertain standing of thyroid sarcoma, but dismissed the matter by stating that there is no sharp dividing line between carcinoma and sarcoma. The close resemblance of the general etiology, clinical course, and gross anatomy of the two conditions fully bears out this conclusion. There remain only histological distinctions, but when these are examined in detail they fail to establish the frequent occurrence of malignant mesoblastic tumors of the thyroid."

However, the sarcomas, if they are so diagnosed, are very rare. As such they would participate in the various classifications of sarcoma, such as fibro, spindle and round cell sarcomas. The real difficulty here lies in the difficulty of the differentiation between the epithelial elements and the connective tissue elements. I should prefer to speak of them all as malignant tumors rather than with specific differentiations. The same difficulty occasionally occurs in other locations of the body, especially such as sarcomas or carcinomas of the ovaries or testicles. Apparently those parts of our bodies which possesses the more nearly embryonal types of cells give us the most difficulties of diagnosis.

Malignancies of the thyroid usually occur in those who have a goiter history, especially of the adenoma type. The adeno carcinomas are usually lobular, with soft peripheries and hardened

centers. They are very vascular. The rate of growth is usually slow, but progressive. The type of cell structure is either cubical or cylindrical and may be diffuse or alveolar. Papillary forms are a sub-group of the adeno-carcinoma type. The capsule is at first intact but later infiltrated. Transition from adult type cells to embryonal types are frequent. Separation between adeno-carcinoma and other forms of carcinoma is very imperfect. The carcinoma may be alveolar, scirrhous, or massive cell type resembling sarcoma "carcinoma-sarcoma." Absence of colloid is an important differential point. All are very vascular. There is also the question of metastases of benign thyroid tissue or whether these areas are embryonic rests of thyroid tissue.

The histogenesis of these tumors is both embryonal and adult in character. The squamous cell type comes from the thyroglossal duct.

The carcinomas, so-called, being of the epithelial type, when clearly defined, take on the form of (1) scirrhous, (2) papillary, and (3) adeno-carcinoma of malignant adenoma. The papillary type is grouped under adeno-carcinoma. The point of differentiation between the malignant adenoma, adeno-carcinoma and carcinoma is also very difficult at times and the question arises as to whether in some of these tumors one is dealing with a malignancy at all. Like all malignancies, these tumors may be slow or rapid in growth, hard or soft in consistency, remaining local or rapidly metastasizing in character. Metastases occur most frequently in the following locations in the following order: Lungs, bones, liver, kidneys, pleura, brain, regional glands. Bone involvement by metastases occurs most frequently in the following order: Skull, sternum, spine, ribs, humerus, femur and pelvis. Those metastases which occur in the lungs and bones, of course, are the most frequent and most readily diagnosed by the X-ray. The difficulties of microscopic diagnosis are well demonstrated by the microscopic slides which Dr. Nordland has shown you.

The question of metastases, I believe, is the most important of all considerations in the treatment of malignant cases. When a malignancy remains local a cure can almost always be obtained provided the malignancy is not associated with or primary in a vital organ. In these cases surgery, cautery, radium and X-ray become efficient agents in the destruction of the malignant process. However, when the malignancy is located in inaccessable localities the treatment becomes of no avail or at best palliative with radiation the method of choice. Care must be exercised in radiation therapy because I sometimes think that excessive radiation therapy is dangerous to the metabolic processes of normal structures, and often patients succumb to toxic products, either of the malignancy or of the radiation. Be that as it may, the question of metastases is of the utmost importance. Experience has told me that metastases may occur *early* or *late* in most varieties of malignancies. Usually the early metastases are not discernible, hence one general principal of treatment is axiomatic—all malignancies should be treated *fully* by the best accepted methods or combination of methods with the expectation of a cure, because when we least expect a cure we sometimes obtain one.

(2) *Treatment*—All thyroids with nodules should be removed surgically, at which time microscopic diagnosis should be made. Potential malignancies may be found in all nodular thyroids, hence surgical removal is prophylactic as well as diagnostic. If a diagnosis of malignancy is made, post-operative radiation, either by X-ray or by radium pack, should be carried out. In clinically inoperative cases, radiation should be instituted locally by the use of radium packs, radium implants and X-ray, and if metastatic, by X-ray. It is not my purpose to give technique of radiation therapy, but to give emphasis to intensive and sufficient treatment. These tumors are considered quite radio-sensitive. Craver, of the Memorial Hospital in New York, reported of 33 cases so treated, 19 died, four not traced, and 10 living, with three showing marked improvement, at the end of several years. Other clinics give similar reports. If a clinical diagnosis can be made, operative procedure should not be undertaken unless the tumor is circumscribed and movable. If no surgical treatment is indicated, intensive radiation by radium and X-ray should be instituted. Those that are far advanced with complications to the larynx, and with metastases to the lungs are practically hopeless.

At the Swedish Hospital one case of Dr. Nordland's is well after three years after treatment by X-ray alone. Others treated by X-ray regressed, but later died of metastases. I recall one severe case, treated by radium packs, that obtained relief and recession for a period, only to die later of recurrence.

I wish to report at this time a case that seems remarkable in many ways, first because of the undoubted malignancy, second, because of the lack of metastases, and third, the method of treatment by radium alone. This was the case of a lady, aged 45, referred to me in July, 1922. There had been a history of enlarged thyroid for some time in this case. While seeing another member of

the family professionally, the physician in charge had his attention called to this patient as having a large nodule in the thyroid region which resembled an abscess nearly ready to open. The patient was sent to a hospital where the lesion was opened but a severe hemorrhage occurred because of the vascularity of the region. The hemorrhage was controlled. The patient went home and later left the state. This was in January, 1922. The condition never healed and a large discharging sinus developed. At one time a very severe hemorrhage occurred after this while she was out of the state. She later returned and I saw her first about July 5, 1922. At that time in the hospital we curretted out of the sinus some small masses of soft mushy material for microscopic diagnosis. The sections showed "entire structure to be made up of gland-like acini resembling thyroid growth without colloid material. Occasional mitotic figures are found. Entire structure is made up of this material. There is some inflammatory reaction in certain portions. Diagnosis: Adeno-carcinoma."

The case looked like a hopeless one. The patient was in a very poor condition generally. However, the local lesion was treated by the insertion of radium needles on July 11, six in number, for eight hours (600 mgh.). Again on the 20th of July four needles were used, 4½ hours, and a radium pack of 100 mgm. was applied over the entire area of the thyroid, 2,100 mgh. On August 20th a second pack treatment of 2,000 mgh. was given. On September 29th, a third pack of 1,200 mgh. was given. On January 8, 1923, a fourth pack treatment of 1,000 mgh. was given. A note on the chart made at this time (January 8, 1923) says: "Very marked improvement and tumor almost gone. Sinus healed." A note on the chart made March 3, 1923, says: "Small gland-like nodules." A treatment was given with radium pack on this date. No further treatment was given. This woman is still living and well after thirteen years.

In conclusion I would make these observations:

1. There is considerable difficulty of absolute diagnosis, both clinically and microscopically, of thyroid malignancy.

2. Surgical removal of all thyroids with nodules is recommended, especially if there is a tendency to continued growth.

3. Thorough radiation should be carried out, either by X-ray, radium, or both, when a diagnosis is made clinically or microscopically.

4. The continued treatment by radiation results in a fair number of cures—depending largely upon the element of metastases or upon the microscopic picture.

CARCINOMA OF THE STOMACH

STANLEY R. MAXEINER, M.D., F.A.C.S.
Assistant Professor of Surgery
UNIVERSITY OF MINNESOTA

A DISCUSSION of carcinoma of the stomach seems to be particularly timely in view of the perfectly hopeless outlook which has usually been presented to patients suffering from this malady. It might seem that at last we may assume a more hopeful and optimistic attitude toward palliation or even possibly toward a cure. Better results can only be accomplished through education of the patient to consult his physician at the very onset of symptoms and also to educate us as physicians to exercise every means at our command to diagnose cancer earlier.

Dean Lewis states that only 20 per cent of carcinomata involving the stomach which report at Johns Hopkins Hospital are resectable and still, Dr. Warwick, from Minneapolis, showed that 23 per cent of necropsies on patients dying from cancer of the stomach had no metastases. Gatewood, in an analytical study showed that his patients waited an average of 5.3 months after the onset of symptoms before seeing a doctor. After these patients consulted their physician another delay of 8.3 months occurred before the patients were submitted to operation. The second delay rested squarely upon the shoulders of the physician and was too often due to his hopeless attitude. It is impossible for me to paint a glowing picture of the end results but I hope to present to you a brighter and more optimistic side to be obtained by surgery in suitable cases.

Carcinoma of the stomach involves the male at least twice as often as the female. Family history plays a part in only 16 per cent of cases. While the average age incidence is about 56 years, 25 per cent of the patients with this disease are under 50, Ostler and McCrae reporting six patients under 10 years of age. One of our own cases with inoperable carcinoma was only 31, and 20 patients were under 45 years of age.

While various reports throughout the large clinics show that only 50 per cent of stomach cancers are operable, a recent report by Balfour gives more encouraging figures. Fifty-eight per cent of all cases diagnosed carcinoma of the stomach were advised exploration and in 42 per cent of the explored cases, removal of the growth was possible. There is no question but what these are the most promising statistics and because of the fact that these patients were explored at an earlier date, Balfour is able to report 273 cases in which resection of the stomach was performed who lived

five years or more. Of these, 128 have lived more than 10 years. This must be taken as a hopeful sign if one considers the report of Friedenwold in 1914 when only 3.3 per cent of 1,000 cases were resectable. Fifty per cent of the cases reported by Gatewood were pronounced inoperable and the majority were victims of procrastination. Of the operated cases, 40 per cent of the patients who recovered from resection lived more than five years, two of his patients surviving 16 and 17 years each. Bloodgood, in 1915, stated that only 26 per cent of cases seen by them were operable. A review of the cases as they report for treatment shows that in general, 50 per cent of carcinoma cases are inoperable, 50 per cent subject to exploration and only 25 per cent are resectable. Finsterer, however, resects 65 per cent of his cases of gastric cancer. It is encouraging to note that 31 per cent of Finsterer's patients with simple resection and 30 per cent of cases in which resection of the liver, pancreas or colon was also demanded who survived operation, lived from five to 18 years without recurrence. Dr. Arnold Schwyzer reports one case living 24 years after removal of cancer of the stomach without recurrence. Langdon Parsons states that without operation the average length of life in their series was but six months, while in the cases resected, 38 per cent of those who survived had a chance to live more than five years, and 56 per cent more than three years. Compare these statements with the fact that without resection, all die and that the average length of life is from five to 15 months after the diagnosis is once established.

Pathology—Bloodgood states that carcinoma of the stomach starts as a local growth in the mucosa. At first of very small size, it develops until it involves the wall of the stomach which becomes thickened and may occur at any point between the pylorus and the esophagus. In the early stages there is no change on the peritoneal surface. Under the microscope there are epithelial cells of distinct morphology, recognizable as cancer cells, the arrangement of these cells varying according to the picture of the various types of carcinoma. In the Mayo Clinic it is held that there is a type of cancer in which the primary stage is chronic ulcer and in which there is a definite displacement of the cells of chronic inflammation by typical cancer cells. The lesion changes in type from the flat-edged ulcer with crater to one with elevated edge and uneven border or niche which, with a crater wider than 2½ centimeters, is usually malignant. In many of these ulcers it is impossible to tell by gross appearance whether they are or are not malignant, and the final diagnosis rests upon the microscopic examination. The chronic ulcer under the microscope shows the inflammation with the granulation base while the malignant ulcer shows the invading carcinomatous cells involving the edge of the ulcer or displacing the granulations in the base.

Much argument has arisen as to the percentage of cancers which develop on ulcer, MacCarthy contending that as high as 70 per cent of their cancer cases develop upon ulcer. Moynihan believes that two-thirds of their cancer cases develop upon an ulcer base but Ewing places the figure at only five per cent. Bloodgood likewise believes that the percentage is small. It would seem that, in any event, the theory of chronic irritation as an etiological factor may well play a part in the pathological change which takes place in the degeneration of a chronic ulcer into a carcinoma. The change from benign tumors to cancer of the stomach is probably a good deal more rare than formerly had been supposed.

Symptomatology—One must constantly bear in mind that early cancer produces but few symptoms. A patient, especially a male, in the cancer age who complains that he is not perfectly well, is pepless, tires easily, cannot concentrate upon his work, sleeps poorly, and feels a general malaise, has lost some weight and is slightly anemic should be carefully regarded for possible beginning cancer. Moynihan speaks of it as the earliest departure from health of which he is aware. Maes says the use of the thermometer and the sputum bottle in the young should be supplemented by gastrointestinal X-ray examination in older individuals. Dyspepsia may not appear until a late date in primary cancer, while it may predominate in the cancer developing on ulcer. That group of chronic dyspeptics who often have a protracted ulcer history who present a recent distinct change in complaints, a sudden exacerbation of symptoms, an absence of interval relief and a lack of response to any form of medical management, must be studied carefully for cancer developing on ulcer. Loss of appetitie, epigastric pain, vomiting, loss of weight, tarry stools, marked anemia and a palpable abdominal mass are listed in medical textbooks as the symptoms of stomach cancer. They are diagnostic signs of advanced disease and if they are waited for we can never hope to improve the end results of surgery.

Anemia is apt to be severe in any malignancy but is never a constant finding. Progressive loss of weight usually indicates advanced disease. A tinge of jaundice is suggestive. Chemical blood in the gastric content and stool is an important

finding but may be even more frequent in benign gastric lesions. Hydrochloric acid may be absent but Hartman reports free hydrochloric acid in 50 per cent of cases studied at the Mayo Clinic, in fact, perfectly normal chemical findings are not incompatible with gastric cancer. Blood studies, gastric analyses and other clinical and laboratory data should always be available but cannot be considered pathognomonic until late in the disease.

X-ray examination of the stomach at the present time constitutes our greatest diagnostic asset but must be used in connection with history and other examination data. White and Leonard state that in no case that they reported as a normal stomach was cancer proved to exist, and Carman found that 95 per cent of gastric cancers gave roentgenologic evidence of their presence. In the hands of a thoroughly competent radiologist, early filling defects, lack of peristalsis or the appearance of a chronic ulcer may suggest early malignancy or gross obstruction, and gross defects may positively detect it. On the other hand, in those occasional doubtful cases, an inventory of all available data, clinical history, etc., must be considered by clinician and radiologist together before a definite diagnosis can be determined and a safe plan of treatment outlined. Re-ray after a short interval may be most important.

Treatment—Given a typical case with generally positive findings of carcinoma of the stomach one must determine whether or not exploratory operation is indicated. McVicar calls attention to the most common sites of metastases as follows: Rectal shelf, liver, supraclavicular lymph nodes, peritoneum (ascites), umbilicus and chest. No patient with carcinoma of the stomach should escape an examination of the rectum. Implants to the pelvis give rise to that firm, cartilagenous feel or a sense of firm resistance to the peritoneum and occasionally the presence of hard nodules can be made out. The Krukenberg tumor, the result of implants in the pouch of Douglas, may be present, gross involvement of the liver may be detected on examination or by X-ray after the use of thorotrast. Liver involvement usually indicates inoperability although its involvement may not preclude palliative surgery. The presence of hard, supraclavicular nodes in the presence of a positive diagnosis of carcinoma means metastatic involvement. If in doubt one of these nodes should be removed for biopsy. Involvement of these nodes is due to spread through the lymphatics and Balfour states, contraindicates any surgery as the span of life in such a patient is very short. Lymphatic involvement may be demonstrable in the region of the navel and is of grave import.

In the absence of gross evidence of metastasis, the surgeon must be governed somewhat in his course of treatment by the duration of symptoms, the size and amount of fixation of the tumor and the general physical state of the patient. Exploration should be performed whenever no absolute contraindication exists with the purpose, firstly of cure and secondly of palliation. Reported cases prove conclusively that clinically inoperable carcinoma may be benefited by resection of the primary mass and that even in the presence of ascites, Krukenberg tumors and metastatic involvement of lymph nodes and liver, pain is relieved, cachexia disappears, general sense of well-being returns and the patient may live in comfort for two to three years to die a painless death from liver metastasis. One patient of our own in whom we did a partial gastrectomy in the presence of liver and lymph gland involvement, had complete relief of symptoms for more than one year and became so well that his insurance company refused to continue his disability. Occasionally, instances occur when radical surgery is performed and enlarged, inaccessible lymph glands are not removed but the patient remains well for 10 years or more. This would indicate that the remaining glands were not malignant or that the disease ceased to progress after the operation. Stimulated by prospects of real palliation, partial gastrectomy should be performed whenever possible in preference to any other operation. Finsterer says, "Without resection every patient will die, and die in pain and misery. Therefore, I must resect whenever possible." In the presence of early or resectable cancer, one should always aim toward permanent cure. Balfour reports that when cancer was confined to the stomach, 53 per cent of patients lived three years but when adjacent lymph glands were involved, only 20 per cent lived three years. It is inevitable that the degree of malignancy of the lesion will determine to a large extent the end results. Gray's figures indicate that of their patients who lived 10 years, 61 per cent were graded group 1 or 2, and 39 per cent were graded group 3 or 4. In those cases of grade 1, the prognosis was twice as favorable as those of group 4.

Bloodgood says that the prevention of chronic ulcer is a prevention of carcinoma. Lahey teaches that within a period of three weeks of intensive medical treatment, all symptoms of gastric ulcer must be completely relieved, that X-ray study must show definite improvement and finally healing, and that blood must disappear from stool and gastric contents of surgery is indicated. Monihan warns that even gastric carcinoma may show a degree of clinical silence with rest and diet. When

in doubt, exploratory operation must be employed and the lesion excised or partial gastrectomy performed. The diagnosis as to whether a lesion is benign and can be satisfactorily treated by excision or gastroenterostomy, or whether the lesion is malignant and will require gastric resection is one that must be made at the time of exploration and upon its accuracy must hang the life of the patient. According to Alvarez, an ulcer the size of a dime has a one to fifteen chance that it is benign, the size of a quarter, one to ten. If the size of a fifty-cent piece, two to one chance it is not benign, and if the size of a dollar, carcinoma is almost positive. The large ulcer with deep penetrating notch is usually benign, while the more shallow ulcer with elevated edge and a niche, 2.5 centimeters, is prone to be malignant. The microscope may be required to make the diagnosis certain. Recently in a case of obstructing ulcer of the pylorus we performed gastric resection for what appeared to be a benign ulcer both clinically, by X-ray and in the gross specimen, but which the laboratory reported to be definitely malignant. Because of the possibility of malignancy being present, partial gastrectomy fortunately was done and not a gastroenterostomy. At almost the same time excision of a larger penetrating ulcer on the lesser curvature proved to be non-malignant. It is in this type of surgery where the lesion is so early that radical surgery may expect to produce its cures.

Operative mortality ranges from five to 51 per cent and usually simple exploration and gastroenterostomy carry the highest mortality as they are done on the poorest surgical risks. Gastroenterostomy is a very poor palliative operation because the poor musculature of a carcinomatous stomach means a poorly functioning stoma, the life of the patient is prolonged only a short time and pain often persists because the ulcerating tumor mass still remains. Exclusion, as recommended by Balfour, divides the stomach above an irremovable tumor, turns in the distal end and anastamoses the proximal end after Polya. This operation is scarcely more hazardous but diverts the current from the diseased portion and thus relieves pain and promotes an improved general health. Simple gastric resection is performed for carcinoma of the stomach with a mortality of approximately 10 per cent. It should always be the method of choice in early tumors as it is the only chance for permanent cure. On the other hand, it should always replace gastroenterostomy and exclusion even in the presence of irremovable metastasis when the primary mass is removable because as stated, removal of the tumor stops pain and cachexia and many patients survive two to five years, to die of painless liver metastasis.

One of our patients on whom we removed the entire stomach from pylorus to esophagus was so relieved. He regained his health completely so that he pursued his hobby of hunting ducks, deer and bear, and told me that he had enjoyed more real pleasures than he had ever had before in his life. He stated that that one year of comfortable activity and the relief from intolerable preoperative pain well repaid him for the discomfort of a surgical operation. Several instances are reported in which resection performed as a palliative procedure had produced entirely unexpected five-year cures. The very radical, complicated resection of Finsterer, in which the liver, pancreas or colon are also resected, carries a mortality of 41 per cent, but is justified by the fact that 30 per cent of survivals live five to 18 years.

Safety of operation is enhanced by careful preoperative preparation consisting of a sterile diet for at least three days, repeated gastric lavage and replacement of fluids and blood. Many postoperative deaths are due to peritonitis in carcinoma patients, the result of an infected stomach content. In ulcer, the stomach content is virtually sterilized by the hydrochloric acid which has been accepted as an indication for its administration and irrigation with .25 per cent solution for several days preoperatively.

The writer has observed more than 60 cases of cancer of the stomach in the past 12 years. The youngest was 31 and the oldest, 78. In a series of 50 cases, 17, or 36 per cent were considered inoperable, seven were explored only; there were seven gastroenterostomies and 18 gastric resections. Among 18 gastric resections there were three deaths, or approximately 16 per cent. There were two total gastrectomies with one death. One resection with a preoperative diagnosis of carcinoma proved to be syphilis and the patient is well. In only two of the patients who had resection could the lesion be called early. It has been quite impossible to obtain a follow-up record but some of these patients are known to be alive and well, although they are all recent or under three years.

Conclusions

1. Improved results from gastric surgery performed for carcinoma of the stomach must depend upon earlier diagnosis and earlier operation. This can only be secured by education of the patient to consult his physician at the first onset of symptoms, and the early diagnosis of carcinoma by the attending physician.

2. The X-ray at the present time is our greatest aid in diagnosis.

3. Chronic gastric ulcer which does not respond to medical management demands surgery.

4. The end results of surgery in gastric cancer are not brilliant but it is infinitely better for a patient with gastric resection to live a few years in comfort than to go on to a rapid, painful death.

5. Surgery should always be directed toward a permanent cure but in the absence of this possibility, palliative surgery produces many very gratifying results. Gastrectomy should at all times be the choice in preference to gastroenterostomy or exclusion.

ELECTROCOAGULATION OF CARCINOMA OF THE RECTUM AND SIGMOID

James A. Johnson, M.D., F.A.C.S.

CARCINOMA of the rectum and sigmoid comprises about four per cent of all carcinomas of the body, and eighty per cent of all carcinomas of the large bowel are located in this area. Its very location makes it a particularly hazardous disease. Although a great deal has been done during the past decade to improve the mortality and to bring about better results in the treament of this condition, there is still much to be desired.

As in other parts of the body, the great majority of these cases occur during the cancer age, and most frequently during the fifth and sixth decades. It is not at all unusual, however, to have the condition develop in the thirties, and I have seen a fatal case at the age of nineteen.

The etiology of carcinoma of the colon is no more clearly understood than is that of carcinoma of other parts of the body. However, since such a large percentage of carcinomas of the colon occur in the rectum and lower sigmoid, it is quite probable that constant irritation is a factor in its development. This is also a frequent location of adenomas, polyps and diverticulitis, and it is a proven fact that many of these undergo malignant changes. It is quite probable, therefore, that carcinoma often develops as a result of pre-existing lesions, and this in a measure may account for its frequency in this locality.

With the exception of epitheliomata (squamous cell carcinoma), which occur only when the growth arises from the perianal skin, all carcinomata of the rectum and sigmoid are adenocarcinomata and vary in their apearance only because of their cellular structure and method of growth. Clinically, there are four types of carcinomas in this locality:

1. The raised or polypoid growth which tends to block the lumen and often gives rise to early bleeding. As a rule they produce early symptoms and are less malignant.

2. The ulcerating, crater-like growth with a nodular margin. These penetrate deep into the surrounding structures, often are late in producing symptoms, and relatively early in invading the lymphatics.

3. The annular constricting growth which contains a large amount of fibrous tissue, and causes early constriction of the bowel. Occasionally acute intestinal obstruction is the first serious symptom.

4. The soft gelatinous or colloid growth, either single or multiple. These are usually rapidly growing and highly malignant.

The symptomatology varies with the location and type of growth. When located in the right half of the colon constipation, anemia and weight loss are usually the predominating symptoms, while those in the sigmoid and rectum often produce early diarrhea, together with frequent stools of mucous blood. Any patient who has previously been regular, then becomes constipated, has diarrhea, loss of weight, and nemia, or passes mucous or blood in the stool should be carefully examined by proctoscopy and X-ray for the possibility of existing carcinoma.

Carcinoma in the rectum or sigmoid in any case is a serious condition, and carries with it grave consequences. The operative mortality is high in individuals in good health. When it occurs in the aged or in persons who have other serious lesions, we must of necessity consider the added risk. One can truthfully say that a carcinoma in this locality in an aged individual is not only a sad condition, but a very formidable lesion. It is often made all the more serious in many cases because of the presence of other lesions, such as coronary disease, myocardial degeneration and marked anemia with weight loss, which renders the patient absolutely unfit for any major operation. Often these old people are cared for by their relatives and do not, with a colostomy, become a welcome member of the household. To take the risk of a radical operation, together with subjecting them to a permanent colostomy, is certainly not very desirable.

It was when I was confronted with such a case on September 12, 1927, that I first employed electrocoagulation with destruction of the growth in situ. The satisfactory result obtained in this case has led me to its application in eight cases. I do not intend to have this procedure replace the classical radical operations in cases that are considered good surgical risks. It is advocated here only for the cases of carcinoma of the rectum and

lower sigmoid that would otherwise be considered inoperable or serious operative risks because of age or other lesions that would make radical operative procedure inadvisable. In these cases electrocoagulation offers the best solution. The mortality is very low, and the results compare favorably with radical operation.

If the growth is located in the extraperitoneal portion and has not penetrated into other vital structures, it can be completely destroyed. If it is in the intraperitoneal portion, especially if it is the infiltrating type almost completely involving the entire circumference of the bowel, there is always considerable doubt as to its complete eradication.

Electrocoagulation has been confined largely to the eradication of external growths. It has also been employed for some time to destroy malignancy in the urinary bladder. There are very few instances, however, where it has been utilized in rectal malignancy.

The cauterization is done with the coagulating current from a diathermy machine. Before beginning the operation, the cautery is always tested on a piece of raw steak. This is important in order to properly gauge its penetration. The operator should be thoroughly familiar with proctoscopy, and have the proper instruments at hand. I use a large operating proctoscope for lesions in the rectum. When the lesion is located high, in the intraperitoneal portion of the bowel, it is necessary to use a smaller scope, and the vizualization is not as good as with the large scope.

The patient is placed on the operating table on the abdomen with the head lowered. Gas or local anesthesia may be used. When gas is used, it is always supplemented by infiltration of local anesthesia about the rectum. The proctoscope is introduced, and a careful examination is made in order to get a comprehensive estimate of the extent and location of the lesion. The growth is then systematically destroyed by coagulation in situ. The technique is often difficult and exacting. This is especially true when the lesion is located above the rectal shelf in the intraperitoneal portion. Great care must be exercised in this portion of the bowel to avoid penetrating its wall, with a resulting peritonitis. Smoke accumulates during the coagulation, but this can easily be removed with a suction apparatus. The operation must not progress too rapidly because of the intense heat that develops.

There is usually very little postoperative discomfort. The patient is kept on a liquid diet during the first two days, and after that a low residue diet, mostly semi-solid. On the third day they are given moderate doses of liquid petrolatum morning and night, and there is usually very little discomfort at stool. The confinement to bed depends on the location and severity of the condition. Most cases may get up and about within a week.

I have not been confronted with any serious complications. There has been no postoperative bleeding. If this should occur it can best be controlled by the cautery.

Patients should be carefully examined two months after the operation for evidence of any remaining growth, and if any is present it is again carefully coagulated.

I have now operated upon eight cases using this method. Three had a second operation because of incomplete removal, and three had to be reoperated as a result of recurrence. This resulted in a total of fourteen operations. There has been no operative mortality.

The following are reports of cases treated by electrocoagulation:

Case 1—Mrs. W., age 84, came for examination on September 12, 1927, complaining that during the past six months she had been passing blood and mucous in her stools and had lost about five pounds in weight. On proctoscopic examination a large ulcerating, infiltrating carcinoma about 8 cm. above the anal sphincter, involving approximately one-half the circumference of the bowel, was found. General examination showed a marked vascular sclerosis, blood pressure 220 systolic, 120 diastolic, frequent extrasystoles and a loud systolic murmur at the apex. She was obviously not in condition for radical operation. Her mental capacity was excellent.

On September 17, 1927, the entire growth was destroyed by electrocoagulation. Microscopic examination showed adeno-carcinoma. She survived the operation without any difficulty. There was smooth healing of the bowel where the growth had been removed, and almost no narrowing of the lumen. On repeated examinations there has been no sign or symptom of recurrence. She is mentally alert and takes an active interest in life at the age of 92. It is now seven years and six months since her operation.

Case 2—Miss G., age 79, was first examined November 22, 1928. She complained that during the past ten months she had been passing blood and mucous in her stools. Previous history revealed that the right breast had been removed eleven years ago, probably for a non-malignant condition. Seven years ago she had fractured her right hip and was able to get about only by the aid of a cane. Proctoscopic examination revealed a large, infiltrating and ulcerating carcinoma on

the right anterior wall of the rectum, involving the valve and extending down onto the internal hemorrhoidal area. On general examination there was marked arteriosclerosis and a deep-seated adenomatous goiter.

November 24, 1928, the entire growth was destroyed by electro-coagulation. Microscopic examination showed adenocarcinoma. She had an uneventful recovery and since she lived out of the city did not return for re-examination until February 9, 1929. At this time there was an extensive recurrence of the growth. This was completely destroyed by electro-coagulation. A recent examination revealed no sign or symptoms of recurrence and the stools are normal. She is now 85 years of age, and it is six years and four months since her original operation.

Case 3—Mrs. S., age 62, reported for examination November 10, 1931, complaining of indefinite rectal distress with occasional diarrhea. Proctoscopic examination revealed a growth about one and one-half inches in diameter, of the raised type, located just behind the second valve on the right side. She had been a semi-invalid for several years because of an old pulmonary tuberculosis. A year previous to her examination she had fractured her left hip. She was not considered a good risk for radical operation.

On November 14, 1931, the growth was destroyed by electro-coagulation. Microscopic examination showed adenocarcinoma, grade 2. She has had frequent examinations since that time and there has been no recurrence to date. It is now three years and five months since her operation.

Case 4—Mr. C., age 68, first examined March 26, 1932. He stated that during the past six months he had noticed blood in the stool, with diarrhea and cramp-like pains. At the time he reported for examination he had had complete obstruction for ten days and there was a great deal of bleeding. He was a very weak, frail individual, almost entirely deaf. Hemoglobin 60, R.B.C. 3,580,000. The urine was negative. He had to be supported on the table by two individuals during the proctoscopic examination, which revealed a large proliferating carcinoma at the rectal shelf and in the first part of the sigmoid. His abdomen was distended and he was suffering from obstruction.

On March 28, 1932, the growth was completely destroyed by electro-coagulation. Microscopic examination showed adenocarcinoma, grade 3. His recovery was uneventful, he had normal stools and began to regain his former strength. On April 15, 1932, he was re-examined and there remained a small amount of pedunculated carcinomatous tissue in the lower sigmoid. This was destroyed by electro-coagulation.

He was again re-examined on June 25, 1932, there was complete healing and no evidence of any growth. He regained his former strength and weight, was able to get about as usual, and had normal stools until March 4, 1933, when he reported again and we found extensive recurrence at the site of the old lesion. The growth was again completely destroyed by electro-coagulation. On April 17, 1933, examination revealed no evidence of growth. On June 2, 1933, he reported again with a large recurrence. He was advised to have a colostomy, which he refused, as he had done on previous occasions. However, on July 4, 1933, he became completely obstructed and a colostomy was done at his home, which he scarcely survived, and constantly grew weaker and died February 9, 1934, one year and eleven months after his first operation. This is an example of a very malignant, rapidly growing carcinoma, and it is quite probable that he would have had a prompt recurrence following any type of radical operation.

Case 5—Mrs. V., age 72, first examined August 17, 1932. Complained of bloody discharge from the rectum during the past eight months, with a great deal of diarrhea and pain in the lower abdomen. She had lost ten pounds in weight and for the past week had not had a stool. Proctoscopic examination revealed a large obstructing annular carcinoma at the recto-sigmoidal junction.

On September 7, 1932, the growth was thoroughly destroyed by electro-coagulation and the microscopic examination revealed adenocarcinoma. She was re-examined on November 2, 1932, at which time there was a small recurrence, or remaining portion which had not previously been destroyed, and which was again coagulated. After this she improved considerably, was up and about, had normal stools and gained in weight, until September 2, 1933, when she was seized with a very severe pain in the abdomen. She soon became distended, apparently had a perforation of the bowel resulting in a general peritonitis. She died three days later, one year after the first operation. We were unable to obtain a post mortem.

Case 6—Mrs. E., age 78, admitted to the hospital February 14, 1933, because of severe recurrent rectal hemorrhages for several months. She was a very frail old lady, was almost completely deaf and was extremely emaciated. She had to be supported during the proctoscopic examination, which revealed several masses of soft

gelatinous carcinoma extending from just above the rectal sphincter into the lower sigmoid, at which point the bowel was almost completely closed. The area about the valves was literally filled with this soft gelatinous growth. She developed a bronchopneumonia and nothing could be done at that time.

On March 16, 1933, about a month after her admission, under local anesthesia, all the masses were completely coagulated. Microscopic examination showed adenocarcinoma, grade 4. She was in stupor for a considerable time, had Cheyne-Stokes respiration, pulse was imperceptible, blood pressure 54 systolic, 30 diastolic. She recovered got out of bed, and regained her strength. On April 5, 1933, she was re-examined and a large mass was found on the first valve. This was thoroughly coagulated. She rapidly regained her health and was discharged from the hospital on May 6, 1933. She had a good appetite, and had normal stools until March 20, 1934, when she was re-admitted for examination. At this time there was a recurrence just beyond the rectal shelf. This was thoroughly coagulated and she was discharged April 2, 1934. She remained in good health until September 2, 1934, when she was re-admitted with intestinal obstruction. There was extensive recurrence in the bowel, almost completely blocking its lumen, and the liver was enlarged and filled with nodules. There were large carcinomatous masses in the right supraclavicular area, the left upper jaw, and multiple nodules in the scalp. She died Sept. 14, 1934, one year and six months after the original operation.

Case 7—Mrs. D., age 84, first examined November 11, 1933. She gave a history that she had had constipation and bleeding from the rectum for the past three months. Proctoscopic examination revealed a proliferating carcinoma in the lower sigmoid. The growth was very soft and there was extensive bleeding on sponging She was a very frail old lady, weighing about 80 pounds, had a systolic murmur at the apex, hemoglobin of 68, and on general examination she was not considered a suitable risk for radical operation.

On January 5, 1934, the growth was completely destroyed by electro-coagulation. Microscopic examination showed an adenocarcinoma, grade 4. Since that time she has been up and about, there has been no weight loss and she has had regular stools. About a month ago she noticed a little bleeding. On March 28, 1935, proctoscopic examination revealed that there is a moderate recurrence at the site of the old tumor, which will again have to be coagulated.

(*Continued in July 1st Issue.*)

NEWS ITEMS

Dr. J. F. DuBois, Sauk Center, has been named secretary of the Minnesota State Board of Medical Examiners.

Dr. J. B. Grace, formerly located at Big Stone, S. D., has moved to Zeeland, N. D., where he will continue general practice.

White Sulphur Springs, Mont., are planning improvements on their health resorts that will cause an outlay of nearly $100,000.

The new municipal hospital at Virginia, Minn., which is now under construction, will celebrate the laying of its cornerstone on June 22nd.

Brainerd, Minn., is making a strong bid for the locating of the new insane hospital that is to be erected in that section of the state this year.

Dr. T. Oftedal, Fargo, was named the new president of the North Dakota Academy of Ophthalmology and Otolaryngology for the coming year.

Dr. S. M. Ferguson, who practiced medicine at Brocket, N. D., for many years, died recently at Des Moines, Iowa, after an illness of several years.

Dr. A. M. Snell, Rochester, was the guest speaker at the May meeting of the members of the Blue Earth County Medical Society held at Mankato.

Dr. Charles L. Dohm, Chisago City, Minn., died on May 30, after an illness of many years. Dr. Dohm was sixty years of age and was born in St. Paul.

Hon. Frank H. Cooney, governor of Montana, will make the speech of welcome at the opening of the annual meeting of the Medical Association to be held at Helena on July 2 and 3.

Dr. D. W. Matthael, Fessenden, was elected president of the North Dakota Health Officers Association, with Dr. Leonard Mayer, Elgin, vice-president, and Dr. M. Williams, Bismarck, secretary.

The many friends of Dr. R. S. Westaby, Madison, S. D., will be pleased to know that the doctor is rapidly recovering from the serious operation that he was obliged to have performed recently.

Miss Adele Edmonds and Dorothy Bow, Minneapolis, are delegates attending the National League of Nurses at their annual meeting in New York City. They represent the University of Minnesota.

Dr. Charles W. Mayo, Rochester, has recently returned from a three months trip in Europe, and reports that "socialized medicine" in Hungary and Austria has done great harm to the medical profession.

Dr. Hans Hansen, who has been on the medical staff at the Veterans Hospital at St. Cloud, Minn., for many years, was entertained at a farewell dinner, before his departure for Canandaigua, N. Y., his future home.

Dr. M. J. Miller and his wife, of Pine River, Minn., were drowned last month by their auto going over an embankment into the Mississippi river. Dr. Miller was a recent graduate of the University of Minnesota.

The May meeting of the East Central Medical Society was held at Pokegama, Minn., with a large attendance of members. Papers were presented by Dr. W. S. Lemon, Rochester, and Drs. Moses Barron and Jalmar H. Simmons, Minneapolis.

Dr. W. H. Valentine, Tracy, Minn., celebrated his 35th anniversary as a practicing physician in that city last month. The doctor will be one of the five administrators of Minnesota as a representative at the Pan-American congress to be held this summer at Rio de Janerio, Brazil.

New officers of the North Dakota State Medical Association elected at the annual meeting held at Minot last month are: Dr. A. D. McCannel, Minot, president; Dr. W. A. Gerrish, Jamestown, president- elect; Dr. E. L. Goss, Carrington, first vice-president; Dr. W. H. Long, Fargo, second vice-president; Dr. A. W. Skelsey, Fargo, secretary, and Dr. W. W. Wood, Jamestown, treasurer.

Dr. J. A. Myers, chairman of the editorial board of THE JOURNAL-LANCET, Minneapolis, and Dr. R. G. Leland, of the American Medical Association, Chicago, are among the leading speakers at the annual meeting of the Montana Medical Association at Helena on July 2 and 3.

The annual meeting of the South Dakota Academy of Ophthalmology and Otolaryngology was held at Pierre last month, when the following officers were elected: Dr. R. A. Kelly, Mitchell, president; Dr. A. E. Johnson, Watertown, vice-president, and Dr. N. L. Taylor, Huron, secretary.

Funds are being solicited by a committee at the University of Minnesota Medical School to establish either a memorial tablet or a scholarship prize in honor of the late Miss Lucretia Wilder, who died as the result of an infection received in the pursuit of her research work on leukocytosis. Contributions should be sent to Dr. Elias P. Lyon, dean, 136 Medical Service Building, University of Minnesota, Minneapolis.

To undertake a study of the so-called "Wayne County Plan," a committee of the Hennepin County Medical Association has been appointed with Dr. W. H. Aurand as chairman. Other members are Dr. H. B. Sweetser and Dr. Douglas P. Head. Much has been written and spoken of the success which followed the decision of the Detroit medical profession to apply the credit principles of installment buying to medicine. The Minneapolis society seeks to discover if a similar or modified plan might be of equal benefit in this community.

The North Dakota State Medical Association held its forty-eighth session at Minot, May 26-28, co-ordinating with the Academy of Ophthalmology and Otolaryngology and the State Health Officers Association. The Medical Association had a registration of over two hundred, and much praise was given to the Minot Committee for both the high grade papers presented and for the social entertainments. Due to the frequent rains the past few weeks the country was a mass of green, and all the people in that region seemed hopeful for excellent crops and good times financially. At the Monday night dinner, Dr. H. A. Brandes, Bismarck, Chairman of the Committee on Medical Economics, gave a full report of the activities of that committee, which showed that a number of the counties have had co-operation between the medical men and the Federal-State-County administrations. However, there are yet some counties continuing to work on the formerly cheap contract basis, due to the fact that some of the county commissioners refuse to abandon the old-time methods, so long as they can get the physicians to work along old lines, in spite of the hard work laid upon such doctors. Dr. L. W. Larson, Bismarck, for the Committee on Public Policy, sent in a paper dealing with legislation affecting the medical profession. Among the topics presented in that paper, and commented upon quite freely by the physicians present at the meeting, was the fact that there had been vetoed at the last legislature a Bill proposing to inflict upon Irregulars stricter penalties for violation of the medical practice act; said Bill having been approved by both the House and the Senate. Retiring President C. E. Stackhouse read an excellent paper, which later will be published in the JOURNAL-LANCET. On Tuesday night was held the annual banquet at the country club, with Dr. W. A. O'Brien, Minneapolis, as guest speaker.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS ON MAY 11, 1935

BY EXAMINATION

(April)

Name	School	Address
Aldrich, Herrick John	U. of Minn., M.B., 1934	St. Joseph's Hospital, St. Paul, Minn.
Armstrong, Thomas D.	Rush Med. Col., M.D., 1933	Mayo Clinic, Rochester, Minn.
Baker, George Stansbury	U. of Maryland, M.D., 1933	Mayo Clinic, Rochester, Minn.
Brunsting, Henry Albert	U. of Mich., M.D., 1930	Mayo Clinic, Rochester, Minn.
Cusick, Paul Leo	Detroit Col. of Med. & Surg., M.B., 1931, M.D., 1932	Mayo Clinic, Rochester, Minn.
Doyle, Thomas James	U. of Minn., M.B., 1934, M.D., 1935	St. Mary's Hospital, Duluth, Minn.
Erickson, Alvin	U. of Minn., M.B., 1934	406 Center St., Des Moines, Ia.
Erickson, Clarence Wilber	U. of Kansas, M.D., 1933	Mayo Clinic, Rochester, Minn.
Erickson, Clifford Orvis	U. of Minn., M.B., 1934	Ancker Hospital, St. Paul, Minn.
Hagen, Wayne Sigvart	U. of Minn., M.B., 1934	Kansas City General Hospital No. 1, Kansas City, Mo.
Hanson, John Willard	U. of Minn., M.B., 1933, M.D., 1934	Abbott Hospital, Minneapolis, Minn.
Harper, Robert Dana	U. of Minn., M.B., 1934, M.D., 1935	St. Mary's Hospital, Duluth, Minn.
Heiberg, Olaf Marius	U. of Minn., M.B., 1934	Minneapolis General Hospital, Minneapolis, Minn.
Hoffman, Roy Albert	U. of Minn., M.B., 1934	Ancker Hospital, St. Paul, Minn.
Iverson, Eleanor Beatrice	U. of Minn., M.B., 1934	University Hospital, Minneapolis, Minn.
Jensen, Reynold Archibald	U. of Minn., M.B., 1934	University Hospital, Minneapolis, Minn.
Johnson, Harold Clark	U. of Minn., M.B., 1934	Ancker Hospital, St. Paul, Minn.
Keefe, Rolland Ellis	U. of Minn., M.B., 1934	Ancker Hospital, St. Paul, Minn.
Kibler, Francis Elmo	U. of Colo., M.D., 1933	Ancker Hospital, St. Paul, Minn.
Lange, William Anding	U. of Minn., M.B., 1934, M.D., 1935	Lake City, Minn.
Lodmell, Lenier Arthur	Northwestern, M.B., 1934, M.D., 1934	3026 S. California Ave., Chicago, Ill.
MacLean, Alexander Robinson	U. of Manitoba, M.D., 1934	Mayo Clinic, Rochester, Minn.
McGreane, Norbert Arthur	U. of Louisville, M.D., 1934	1003 Ivy St., St. Paul, Minn.
McKean, Robert Scott	Northwestern, M.B., 1932, M.D., 1933	Mayo Clinic, Rochester, Minn.
Menville, John Gilmer	Tulane U., M.D., 1930	Mayo Clinic, Rochester, Minn.
Miller, Marvin Jesse Arthur	U. of Minn., M.B., 1934, M.D., 1935	Pine River, Minn.
Moehring, Henry George	U. of Minn., M.B., 1935	Hovland, Minn.
Morgan, Hugh Owen	U. of Minn., M.B., 1934	Miller Hospital, St. Paul, Minn.
Nash, Leo Axel	U. of Minn., M.B., 1934	University Hospital, Minneapolis, Minn.
Nelson, Arthur Alfred	U. of Minn., M.B., 1934	1022 Pioneer Hall, U. of Minn., Minneapolis, Minn.
Nelson, Wilburn Oliver Bennett	U. of Minn., M.B., 1935	Ironton, Minn.
Penk, Engward Louis	U. of Minn., M.B., 1934	St. Luke's Hospital, Duluth, Minn.
Ripka, Emily L.	U. of Minn., M.B., 1933, M.D., 1934	University Hospital, Minneapolis, Minn.
Schroeppel, John Earl	U. of Minn., M.B., 1935	University Hospital, Minneapolis, Minn.
Sher, David Adler	U. of Minn., M.B., 1934	617 Washington Ave. S. E., Minneapolis, Minn.
Simonton, Kinsey Macleod	Geo. Wash. U., M.D., 1933	Mayo Clinic, Rochester, Minn.
Sowers, Bouton Franklin	U. of Mich., M.D., 1931	Mayo Clinic, Rochester, Minn.
Stickney, James Minott, Jr.	Rush Med. Col., M.D., 1934	Mayo Clinic, Rochester, Minn.
Tillisch, Jan Henrik	U. of Minn., M.B., 1932, M.D., 1933	Mayo Clinic, Rochester, Minn.
Trinkle, Albert Joseph	U. of Kansas, M.D., 1933	Path. Dept., U. of Minn., Minneapolis, Minn.
Walsh, Maurice Nihill	Detroit Col. Med. & Surg., M.D., 1931	Mayo Clinic, Rochester, Minn.
Wilmot, Cecil Alfred	U. of Minn., M.B., 1935	St. Mary's Hospital, Duluth, Minn.
Wolff, Luther Horn	U. of Pa., M.D., 1932	Mayo Clinic, Rochester, Minn.
Wood, George Archie	Stanford U., M.D., 1934	Mayo Clinic, Rochester, Minn.
Wright, Wale Samuel	U. of Minn., M.D., 1934	Minneapolis General Hospital, Minneapolis, Minn.

BY RECIPROCITY

Prendergast, John James	Loyola U., M.D., 1932	Miller Hospital, St. Paul, Minn.
de Berry, Ellett Morrison	U. of Texas, M.D., 1922	470 N. Mississippi River Blvd., St. Paul, Minn.

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The Danger of Nationwide Amoebiasis*

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THE recent outbreak of amoebic dysentery originating in two Chicago hotels and disseminated therefrom throughout the country has led many to ask: What is the danger of nationwide amoebiasis? The following discussion will attempt to bring together such epidemiological evidence as exists relative to this disease in order to formulate some suitable answer to the above query. That such an answer is needed is indicated by the uncertainties on the part of many who are unacquainted with the habits of the causative organism, *Endamoeba histolytica,* and have but a superficial knowledge of its transmission and present incidence.

The term "amoebic dysentery" is, in a sense, a misnomer. Strictly speaking, the term is more expressive of an acute colitis which often accompanies this disease. It is not descriptive of the subtle infection found in carrier cases, in which the cytolytic action of the parasite is counterbalanced by the regenerative power of the host intestinal tissues. We shall give the two types brief consideration.

The acute, dysenteric type of amoebiases is characterized by the presence of bloody mucous in the feces. Such symptoms as malaise, cachexia, loss of weight and general nervous instability result, with an occasional rise in temperature. In the fecal discharges mainly the trophozoite or active stage of the parasite is found. These soon disintegrate upon being discharged to the outside. This type of amoebiasis is more easily diagnosed and more often brought under control. As the infection endures, amoebae are transported by the blood to other tissues, such as the liver, lungs, central nervous system or skin (Kofoid, 1924, *et al*), where they set up secondary lesions. From these tissues only trophozoite stages have been recovered, and there is no evidence that these will produce the disease through contact.

In the carrier type of the disease lies the real danger. This has long been maintained by Craig and in his treatise (Craig, 1934) he presents much evidence in support of his contention. In this type, where diarrhea is seldom present and the symptoms are obscure, mainly cysts and partially developed cysts are discharged. The cysts are directly infective. There is some evidence that partially developed cysts will develop to the infective stage outside the host. In this type, also, secondary lesions may be developed.

It is of importance to our discussion to know how dysentery amoeba cysts are transmitted. In general they are transmitted in much the same way as the typhoid organism. They may be disseminated through contaminated food, water, through the agency of soiled fingers, by accidental arthropod vectors, or, as pointed out by Craig, through the contamination of swimming pools. Recent investigations have added much light to our knowledge of this phase of the problem.

Considering all endemic regions probably most infections occur through the contamination of

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food, especially fresh garden produce, with feces either through the use of unsterilized night-soil as fertilizer, or through insanitary methods of infected food handlers. Throughout much of the Orient, night-soil (human feces) is the only source of fertilizer and consequently it is highly valued and widely used. Cysts of *Endamoeba histolytica* will remain alive for considerable periods in feces. Thomson and Thomson (1916), using the eosin test to indicate viability, found some cysts to perish in three weeks, whereas Yorke and Adams (1926), using the culture test, decided that they never lived longer than nine days at room temperature. Cysts have a fairly high thermal death point, about 68 degrees C. according to Boeck (1921), and will resist freezing for considerable periods of time. Yorke and Adams found cysts would remain alive for seventeen days at 0 degrees C. (32 degrees F.). Obviously, with such longevity, chances of dissemination are great under insanitary conditions.

The rôle played by water in the transfer of amoebic infections has long been suspected but never proved. The Chicago outbreak of 1933, summarized by Bundesen, Tonney and Rawlings (1934), was the first clear-cut epidemic which can be laid to this type of transmission. From two hotels in the heart of Chicago, 721 clinical cases of amoebic dysentery originated, and these were transported to 206 cities in the United States. An additional 1,049 carriers were diagnosed and in Chicago alone 14 deaths resulted. What the ultimate ramifications of this epidemic will be we can only imagine.

In this epidemic certain interesting conditions involving sanitary engineering were found. A study of the situation revealed that during storms in the Chicago area the city drains would not carry all of the waste and much of it was forced back to discharge into the basements. Here certain of the hotel employees were accustomed to eat their lunches. A further study of the sewage system showed that many pipes had rusted entirely through and sewage was being discharged directly into the basement and upon equipment below. In one case a leak in the sewage pipe was found over an ice vat used for the cooling of drinking water. The cover of this vat had disintegrated to the point that it afforded little protection from the dripping sewage. Most important, probably, in the contamination of the drinking water were the two direct connections found between the sewage pipes and the house water mains in one of the hotels. These were separated only by valves, both of which had degenerated and were leaky when closed. One of them had apparently been left open. The water into which the sewage drained was pumped to a tank in the roof of the building and fed directly into pipes supplying all the rooms down to the third floor.

Another problem of water transmission expressed by Craig (1934), is the part played by the swimming pool in the dissemination of amoebic cysts. If we accept Craig's estimate of between five and ten per cent infection in our population, it becomes evident that in swimming pools and fresh water lakes used for bathing the fecal contamination of the water must be considerable regardless of present sanitary precautions. If water contamination is present, conditions for infection are ideal during swimming or diving.

There are some data on the longevity of *Endamoeba histolytica* cysts in water. Wenyon and O'Conner (1917) found they would remain viable for one month. Thomson and Thomson (1916) found them to live for 25 days, whereas Boeck (1921) showed that cysts concentrated in the feces, washed and cultured in distilled water, would live as long as 153 days, and, if a preparation of cysts were sealed with vaseline and kept at temperatures between 12 and 22 degrees C., some remained viable for 211 days. Penfold, Woodcock and Drew (1916) found cysts remained alive for 15 days in slowly running water.

In the Chicago epidemic the question was often asked: If this is a case of water transmission, why were not concurrent epidemics of typhoid and paratyphoid fevers present? The answer is simple. The bacilli of these infections are killed by the chlorination process, whereas the amoebic cysts are not affected by it. That this is the case has been demonstrated through the work of Yorke and Adams (1926), *et al,* and has since been verified by Chicago workers.

The direct transmission of amoebic dysentery by soiled fingers may account for some cases. Cases originating in this manner, however, must be relatively rare unless the soiled fingers should belong to food handlers engaged in the preparation of salads or other moist, uncooked dishes. Spector and Buky (1934), using the eosin test of viability, found that cysts rarely survived air drying on the fingers or thumbs for more than five minutes. Andrews (1934) continued researches of this sort to the longevity of cysts under the fingernails. Using the eosin criterion for viability he found that under the fingernails cysts would exist much longer than five minutes, and, that the period of viability is sufficiently long to contaminate cold, moist foods and beverages.

It is conceivable that many arthropods may

transmit amoebic dysentery in a purely accidental fashion. The filthy habits of the cockroach fit it admirably as one possibility. Flies of various sorts, especially the housefly, *Musca domestica*, are well adapted in their habits and morphology to act as vectors of amoebiasis. Thomson and Thomson (1916) apparently first demonstrated that cysts would pass through the alimentary canal and could be found in the fecal droplets of flies. Wenyon and O'Conner (1917) showed that cysts of *Endamoeba histolytica* could remain viable in the intestine of the housefly for 16 hours after feeding. Roubaud (1918) found that histolytica cysts could pass through the intestine in a viable condition, and could be found in the feces for from 24 to 48 hours. Root (1921) found that trophozoites were killed in less than an hour in the intestine of the housefly, but that cysts would endure up to 49 hours. Frye and Meleny (1931) found cysts in the droppings and intestines of houseflies caught in homes in a community of 374 people in Tennessee, where the incidence of amoebiasis reached 38 per cent. They attribute the high percentage to housefly transmission in this instance.

In spite of the work done on fly transmission of amoebic dysentery, its rôle has never accurately been evaluated. Craig (1934) discusses a previously reported outbreak in American troops serving in El Paso, Texas, in which 118 soldiers were admitted to the hospital during a four-month period from July 1, 1916, to November 1, 1916. He considered the housefly responsible for this epidemic. All but five of these cases originated in and about El Paso. Most of the subjects came from the northern states where infection is relatively rare. Contact was thought to have little to do with the outbreak since cases appeared sporadically throughout the ranks, especially in the mounted organization and mainly in September. That the infection was not water-borne was evidenced by the fact that the troops used the same supply as the town of El Paso. The only factor to which the blame could be laid was the great number of houseflies in the army camps. There seemed to be a correlation between fly occurrence and incidence of infection, the peak of occurrence of both being simultaneous.

Several years ago the possibility of wind transmission of *Endamoeba histolytica* in dust was widely maintained. It was thought that the cysts could undergo much dessication as is true of those of some of the free-living amoebae. This view has been abandoned by most workers of recent years following such researches as those of Spector and Buky, and Andrews (*loc. cit.*).

A question which naturally arises is as to the incidence of amoebiasis in man in the United States. It is impossible in a review of this sort to cover all of the surveys made in this country. Therefore, we shall attempt to give representative studies from various regions. It must be kept in mind that the majority of the studies reported relate to the clinical incidence of the disease, i.e., endamoebiasis in a selected group showing gastrointestinal disturbances.

Lynch (1930), discussing the above matter, points out that *Endamoeba histolytica* is worldwide in distribution, although it is more prevalent in the warmer climates, in unsanitated rural areas and in institutions where close personal contact is required. He expresses the opinion that in the United States it will probably average less than 10 per cent, and further states: "In the experience of the writer, the incidence in the population of the modern city and town is nearer three per cent." Craig (1934), on the other hand, voices the opinion that the incidence of infection in the United States is between five and ten per cent, or that between 6,000,000 and 12,000,000 people are affected by this parasite. He tabulates many surveys made in this country, including 49,436 individuals showing an average infection of 11.6 per cent. Craig says: "If one be extremely conservative, the evidence is certainly sufficient to warrant the statement that at least one per cent of the population, or 1,200,000, are harboring this parasite."

The incidence of amoebic infection in the South is represented by the studies of Meleney (1930), Milam and Meleney (1931), Faust (1931), and Meleney, Bishop and Leathers (1932). Meleney (1930) reports on the incidence of *Endamoeba histolytica* in children, largely from six to 17 years, from white schools in rural sections of east and middle Tennessee. Many of the subjects lived under primitive conditions in the hills of the Cumberland Plateau. Out of 4,987 individuals examined, 34.6 per cent infection was noted. In a detailed study of five families of five, six, seven, four and five individuals, amoebic infections were found in five, six, four, four and four members respectively.

Faust (1931) examined approximately one thousand white persons, consisting of: (1) children under twelve years from welfare clinics; (2) boys between twelve and twenty years from a well-kept "home"; (3) men and women from wards in Charity Hospital, and (4) a series from the obstetric service of Charity Hospital. He adds unpublished data provided by Dr. F. M. Johns on 181 medical students, 234 ambulatory clinic

patients and 189 private patients. The group as a whole represents pretty much a cross-section of the southern population. In the welfare clinics and pediatric service, 7.7 per cent infection was noted; in the boys' "home," 12.5 per cent; 27.2 per cent in the male medical wards; 13.1 per cent in the female medical wards; 25.2 per cent in the obstetric service; 8.27 per cent in the medical students; 7.26 per cent in the ambulatory clinic patients, and 9.05 per cent among the private pay patients.

Milam and Meleney (1931), in 374 individuals examined in rural Tennessee, found 38 per cent infection. Meleney, Bishop and Leathers (1932) report on a survey of 20,237 individuals in Tennessee with an incidence of 11.4 per cent.

The incidence of amoebic infection on the West Coast is presented by the reports of Kofoid (1926), Kessel and Mason (1930), and Sumerlin (1934). Kofoid found an incidence of 13.1 per cent in his studies with the California State Board of Health. Kessel and Mason, in Los Angeles, found 9.8 per cent infection in that vicinity. Sumerlin, reporting on the incidence of amoebiasis in his private practice in San Diego, records 2.3 per cent infection in 1,339 adults examined, and 0.4 per cent in 513 children.

In the Middle West a number of surveys have been made. Of particular interest are those of Magath and Ward (1928), who report an incidence of 7.9 per cent in 457 patients, Riley (1929), who found 1.4 per cent infection in 500 ex-service men examined in Minnesota, and Brown (1932), who reports an incidence of 5+1 per 10,000 examinations on 20,975 patients from Olmstead County, Minnesota.

In the East, also, there have been a number of surveys. Thomas and Baumgartner (1925) found 1.7 per cent infection in 1,100 inmates of a New York institution. Andrews and Paulson (1931) report an infection rate of 0.2 per cent in 522 subjects examined at Baltimore. Wenrich, Stabler and Arnett (1934) found an incidence of 4.1 per cent in 1,060 students at the University of Pennsylvania.

Another phase of the amoebic dysentery problem which deserves consideration before answering our introductory question is regarding the non-human reservoirs which may exist. It has long been known that cats would contract amoebic dysentery and they have often been used in the xenodiagnosis of the disease. In dogs, natural infections have been reported by numerous investigators, but in all of these the acute or subacute type of infection characterized by discharge of trophozoites was noted. In none of the animals were cysts present and this tended to exclude the dog as a natural reservoir. In 1929, Faust found the first two natural infections of dogs in New Orleans. This led to his extensive studies (Faust, 1932), in which he demonstrated that under certain conditions the dog may become a carrier. Using his canine strain labelled "A," sixty dogs were infected. Fifty-eight of these died of amoebic enteritis or intercurrent infections. Using canine strain "B," five dogs were infected. All of them died. Seven human strains were tried on dogs, one animal utilized for each strain. Four of them developed infections. Of particular interest is the fact that Faust found that in some animals following administration of cod liver oil a carrier phase of the disease developed, following the acute, and cysts were discharged from the intestine. Andrews (1932) found a natural case of chronic amoebiasis in a Baltimore dog in which cysts were discharged in the dejecta. He voices the possibility that in nature the dog may be a carrier.

The possibility of rats harboring *Endamoeba histolytica* in nature has been entertained by some authorities. Lynch (1915) described an amoebic infection in rats in which the organism was morphologically indistinguishable from *Endamoeba histolytica*. A similar infection was reported by Chiang (1925). Kessel (1923), *et al*, have shown that rats can experimentally be infected and the strain maintained in them. In 1928 Kessel reported 'histolytica-like" amoebae from the intestine of domestic hogs and this host, also, may play some part in maintaining the infection in nature. Certain other workers have described histolytica-like amoebae from monkeys and in certain localities they may act as a natural reservoir.

In the foregoing discussion we have shown that endamoebiasis is already nationwide and that two general types of the disease occur, i.e., the acute and the carrier. We have stressed the public health importance of the latter. Cysts from the carriers may contaminate water and, under certain conditions, produce extensive outbreaks. Due to the spectacular Chicago outbreak, and the rôle played by water in the transmission of the cysts in this epidemic, certain workers have minimized the importance of other methods of spread. This is always a dangerous policy. We must keep in mind that the Chicago epidemic represents but a small part of our nationwide amoebiasis, and that other factors are important in the spread of the disease. The danger of infected food-handlers should not be underestimated, and neither should the rôle of flies in amoebic spread be overlooked.

We must also give serious consideration to the swimming pool as a disseminating agency. When we consider the hordes of people using our public beaches and swimming pools in the summer, and consider the longevity of the parasite in water, the problem reaches serious magnitude.

Under certain conditions domesticated and native wild animals may serve as reservoirs of the disease, although their importance has never been evaluated. Hogs, dogs, cats, rats and monkeys have been incriminated as harboring amoebae which are morphologically identical to the species pathogenic to man. Dogs, cats, rats and monkeys have all been infected experimentally with *Endamoeba histolytica* of man.

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FACTORS INFLUENCING THE DECLINE IN THE TUBERCULOSIS DEATH RATE*

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THE essential knowledge concerning tuberculosis as a specific and communicable disease was available to the medical profession even earlier than similar data explaining the parasitic origin of communicable diseases as a whole. It remained for the Bacteriologist following the work of Pasteur, who in 1879 resolved the complicated theory of spontaneous generation into the simple one of parasitism, thus putting preventative medicine on a rational basis adding epidemiology to the doctor's social responsibility and professional equipment. Villemin[1] completing a long series of experiments in 1865 briefly summarized his work before the Academy of Medicine of Paris, as follows:

1. Tuberculosis results from a specific casual agent, a virus.
2. This agent must reside, like its congeners in the morbid products formed by its direct action on the normal elements of the affected tissues.
3. Introduced into an organism susceptible to its action it must continue to reproduce itself and at the same time to reproduce the disease of which it is the essential principal and the determining cause.

The work of Villemin finally published in 1868 became the center of much discussion and further experimentation. Klancke,[2] 1843, Tappenheimer,[3] 1877; Cohnhein,[4] 1877; Schuchardt,[5] 1881; Arnold,[6] 1881; all performed pioneer work in searching out the etiology of tuberculosis which culminated in 1883 with Koch's discovery of the

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tubercle bacillus. Since 1882 all the necessary knowledge concerning the control of tuberculosis has been available for our use. The application of this knowledge to the problem of tuberculosis control is one of outstanding importance confounding the medical profession of yesterday, to confront him again today and tomorrow.

It is not pertinent to this discussion to attempt an explanation of the reasons underlying the delay in the application of known measures of control to tuberculosis. It was one of the first to be recognized as communicable and one of the last to be definitely placed under the administration of the Health Department. It would appear that our powers to assimilate and to put into practice accumulated knowledge concerning measures of control has not kept pace during the past fifty years with the judgment resulting from research on the one hand and epidemiological experience on the other. While tuberculosis was recognized by many as an infectious disease, even before the isolation of the tubercle bacillus, control measures of proven value in other diseases have remained fallow so far as this contagious disease is concerned.

In the past purely clinical barriers have prevented the entrance into this field by those trained in preventative medicine and public health practice. The general acceptance of the skin sensitization test, the findings revealed through the use of the x-ray and the changes brought about in the Sanatoria following the invasion of surgery into the field of tuberculosis therapy have all aided in giving to those responsible for the care of the tuberculous a new point of view.

It is most encouraging to see the epidemiological work carried on by each Sanatorium, to find the family physician diagnosing cases in his practice through history of contact followed up by the skin sensitization test and x-ray. Formerly the diagnosis of tuberculosis was made the last of a series of clinical evasions, while today the various appellations given to it in the past are rarely heard. As a result of the co-operation between the family doctor and the Sanatorium, great strides in both prevention and control are being made.

The general distribution of tuberculosis infection throughout the civilized world, perhaps even to those not so stigmatized, has been due to factors controlling our personal and herd habits as much as any qualities inherent in the tubercle bacillus. The human body is a good host and in return the tubercle bacillus seldon kills. When tuberculosis becomes a killing disease it is only following a long parasitic existence in the body of the host during which time it has developed many areas of infection, and again found means of escape into the environment outside of the infected body to repeat, if possible, its parasitic existence in a new subject.

Up to the time of Villemin, Pasteur, and Koch, exposure to susceptibles during the time leading up to the moment of clinical breakdown extended over a period of months, and even years before the final diagnosis was made. Even then it was usually dependent upon nutritional changes, excessive drainage of purulent discharge from pulmonary ulcerations dignified with the name expectoration, or severe and repeated pulmonary hemorrhages. Tubercular diathesis and tubercular cachexia were looked for and depended upon in diagnosing a condition which in reality was the terminal state of a chronic and specific infection. Too often, even nowadays, we find ourselves trying to explain by some other route than tuberculosis the cause of streaking or even of frank pulmonary hemorrhage. We have classified rales into many and more or less useless groups in order to help someone escape for too long the inevitable diagnosis that awaits him, the diagnosis of pulmonary tuberculosis. We have been taught to avoid making, rather than make the diagnosis, to postpone and procrastinate in arriving at one of the most important decisions that we, as doctors, must make in behalf of our patient. With the use of facilities at hand the family doctor is equipped to diagnose tuberculosis early and accurately, as well as to direct and protect the exposed family with judgment. The family doctor is the basis of successful tuberculosis control and upon him must rest the responsibility for early diagnosis and prompt isolation of positive sputum cases. To him the stricken family must look for wise leadership in the management of their family disease and its resulting problems.

The clinical control of tuberculosis has only an incidental influence upon the epidemiology of the disease. The fact that tuberculosis death rates are consistently becoming lower cannot be explained on the basis of increased sanatorium construction. Mexico[7] with no sanatoria has shown a marked drop in its death rate from tuberculosis. States with but one sanatorium of one or two hundred beds show the same decrease in death rate as shown by the state that has provided itself with a well-equipped sanatorium system. In the eighteen states containing the largest Indian population, a definite trend towards lower Indian death rates is in evidence.

During the period from 1925 to 1930 five of the states with a relatively small Indian popula-

tion reported an increase in their tuberculosis death rate averaging from 24 to 325 per 100,000 population. This increase involves an Indian population (1930) of 20,975, among whom 90 deaths occurred.

For the Indian in the eighteen states, there has occurred more than a 60 per cent decrease in the death rate during the period considered.

DISTRIBUTION OF INDIAN POPULATION AND TUBERCULOSIS DEATHS BY STATES, 1929-1930

	Popu'ation, Indian		Indian Deaths, Tuberculosis		Rate Per 100,000	
STATE	1925	1930	1925	1930	1925	1930
Arizona	35,827	47,048	431	144	1,230	870
California	18,812	7,776	51	25	369	48
Colorado	792	813	10	7	1,390	860
Idaho	3,963	3,890	56	28	1,410	714
Kansas	1,522	1,602	4	7	262	436
Minnesota	13,910	15,767	60	46	431	291
Montana	10,869	14,238	67	67	616	471
Nebraska	2,620	4,358	18	16	686	360
Nevada	4,077	4,975	9	21	220	422
New Mexico	12,481	19,714	35	52	288	263
North Dakota	9,911	10,793	39	45	392	416
Oklahoma	16,861	19,899	38	37	225	185
Oregon	3,793	4,518	16	18	421	398
South Dakota	24,241	23,726	157	111	647	476
Utah	1,172	1,591	4	6	341	377
Washington	10,220	11,876	53	53	518	446
Wisconsin	8,002	10,301	80	36	997	349
Wyoming	1,808	2,014	4	11	221	546
Total	180,881	204,899	1,132	730	591	361

The Indian Bureau has contributed many factors which must be given consideration in any attempt to explain this decrease in deaths. Much welfare work has been carried out through the employment of trained public health nurses. Agency personnel have been teaching the importance of a balanced diet, isolation of the positive sputum case, and the necessity of early recognition and removal from the family group of the clinical case.

The Indian, in his turn, has co-operated as fully as his means and opportunity would permit. He has modified his environment during the past few years sufficiently to reduce the death rate among his group, making it compare favorably with the same decrease occurring among his white neighbors.

While there has been a decrease in the number of clinical cases as well as deaths due to tuberculosis in the Indian population, there has been little or no organized fight against tuberculosis in the Indian group. This, while the white citizens have built sanatoria, maintained tuberculosis clinics, dispensaries, and summer camps, bought seals and contributed in many ways to organized effort the major object of which is, and has been, tuberculosis control.

The outstanding contribution made by the sanatorium to tuberculosis control is through the removal of the positive sputum case from the home. Isolation has been periodic and quite accidental since the sanatorium has, until of late, failed to retain the positive sputum case from frequent visits away, while little or no attempt was made to carry out a contagious technique either in the sanatorium or in the home. The sanatorium has, however, rendered a valuable service which will become of even greater value when it finally comes to render first aid to the family physician in the care of his tuberculous cases during their infectious stage.

In the control of a contagious disease there arrives a time when its incidence lowers to an irreducible minimum. Only by the application of some new principal of control can the death rate be reduced to still further levels. The sanatorium with other known and available means are the instruments that can reduce our present case and fatality rate to a point near absolute control. While the sanatorium's contribution to tuberculosis control has not been marked, it will become a most valuable instrument in the future anti-tuberculosis program forming a co-partnership with the family doctor and the Health Agencies in the community. So far as the decline in our tuberculosis death rate is concerned, we know that it began even before the identification of the tubercle bacilli was made by Koch in 1882, and long before Sanatoria beds were even considered desirable or useful in the care of the tuberculous.

The factors influencing our tuberculosis deaths have operated during the same time and in much the same way to influence other communicable diseases, especially those which seek human excreta as a vehicle for transport from the host to the uninfected. The general improvement of living conditions making the exchange of infected sputum difficult, if not impossible, has been the chief factor in saving many from tuberculosis deaths.

The last of the "treen" and bowl-turners in England, still works at his trade on Buckleberry Common, the end of an industry once supplying to the English people wooden dishes before and up to the use of pewter, china, and glass. The early years of the eighteenth century saw these wooden dishes in common use in England; washing to a point of mechanical cleanliness was difficult, while sterilizating was quite impossible and quite likely not attempted.

Only during the seventeenth century, knives and forks came into use among the wealthy. Fingers were used in the handling of cooked foods at the family meal. Water for the purpose of washing the hands was obtained with difficulty and conserved with care, frequently it was used by more than one. Soap, while known soon

after the beginning of the Christian era, was not ordinarily used for the purpose of keeping the hands clean until its chemistry was understood in 1813, and it became a commercial commodity during the second quarter of the last century. The soft and hard soap, made out of the accumulation of the winter's wood ashes, and the bacon skins and grease from the kitchen, were the only cleaning compounds known to the youth of our grandparents and their caretakers. Fresh and green vegetables and fruits were unknown to most of us and a luxury to the rest for many months of the year until a time within our own memory. Individual canning, as well as fruit and vegatable drying, was our attempt to obtain a balanced diet. Houses were built for shelter rather than for health, ventilation, as the night air, was a thing to avoid. Comfort had not yet become a necessary element in the planning of a home.

Dirt and flag stone floors are but a few years back in the ancestry of most of us. The family cuspidor was equally useful to the tuberculous member of the family as it was to the tobacco and snuff-chewing element. Each thirsty member of any household drank from a dipper hanging down into the common water supply. Babies teething or being weaned frequently had their food masticated for them by a kind old aunt if the mother was not around to perform this duty for them. Gum, or its earlier substitutes, at one time was used by more than one. Many more avenues for the transfer of tubercle bacilli to the uninfected have been closed through the improvement of our living conditions over those of only a few years ago.

The influence of real wages upon the death rate from tuberculosis seems to be more apparent at this time than any other single factor. Ewart[8] finds a very significant relationship between "real value of wages" and the tuberculosis death rate in England and Wales, 1851 to 1920. The problem of wages is closely tied up with nutrition, sanitation, and housing, since an increase in real wages gives the wage earner and the community as a whole an opportunity to provide for themselves to better advantage than when real wages are decreased. The machine age has done much to standardize employment and secure an actual increase in real wages for the women. The many improvements in both home and city planning during the past two decades have been due to a consistent and continuous increase in real wages. Chronic pauperism today afflicts few besides the imprudent. Of the three scourges afflicting mankind, namely, war, famine and pestilence, we have actually, or we have the knowledge whereby we might, control famine and pestilences. War, the least serious so far as tuberculosis death rates are concerned, remains an unsolved problem.

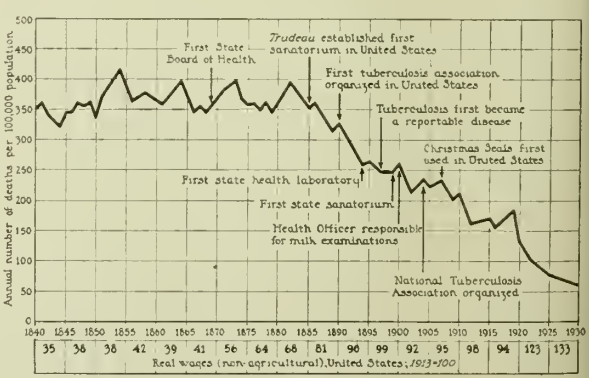
"The most sensitive indicator of malnutrition is, without doubt, the death rate from tuberculosis, and its relation to under-feeding was brought into glaring relief by the fortunes of the war."[9]

Social catastrophes are temporary in nature and usually local in character. It is doubtful if they exert a permanent influence upon the incidence of or the death rate from tuberculosis. It seems that a rise in real wages wisely expended is the one single element exerting a beneficial effect on the fall in tuberculosis death rates. Shorter hours of labor with an increase in real wages will become a threat to our present accomplishments in tuberculosis control if the unemployed hours and increased earnings are given over to dissipation and excess. Such opportunities taken advantage of by labor will result in tuberculosis control and race betterment, but ignored, the prophesies of the eugenist will give promise of fulfillment.

The relation between the rise in real wages and the decline in the tuberculosis death rate would seem to be a more significant factor in the tuberculosis decline than the machinery specifically set up for the sole purpose of its control.

In Chart I there is shown a steady rise in the "real value of wages" with a steady decline in the death rate beginning long before modern science entered the field of preventative medicine. The only break in the decline was during 1911-1921, when a definite rise in the tuberculosis death rate occurred, influenced considerably by the war and the influenza epidemic. As soon as these factors accompanying, if not dependent upon, the war no longer operated, the decline set in and has since continued with a steady rise in the "real value of wages."

DECLINE IN DEATH RATE FROM TUBERCULOSIS, 1940-1930, NEW YORK, PHILADELPHIA, BOSTON
Showing Its Relationship to the Adoption of Control Measures and Control Factors



The decline in the tuberculosis death rate does not begin early: From 1840 to 1875 there does not seem to be any control forces operating. The relationship of real wages, however, to the graph remains constant: With the increase in the "real value of wages" beginning in 1870-1875, a definite lowering is indicated which becomes more pronounced after 1885, when such wages have become doubled over what they were from 1840-1870. While there is no available data showing the "real value of wages" in New York, Philadelphia and Boston, it is assumed that they would correspond with the data concerning the non-agricultural population of the United States during the same period.

General W. C. Gorgas[10] has given his opinion concerning sanitation and disease control in Panama, emphasizing the various elements contributing most to the successful completion of the project during the year 1905. At this time pressure was being brought to bear by his supervisors that he and his medical associates be "relieved, and men more practical and sane replace us. The request for our dismissal was made by the commission in June, 1905. In September, 1905, the last case of yellow fever occurred in the city of Panama, and only one case has occurred in the Republic since that time." In explaining the success of the venture he says, "I am satisfied that to this improvement in social conditions, caused by our high wages, we principally owe our extraordinary improvement in general health conditions." Concerning this association of wages with the death rate he concludes that "I have been fortunate enough to labor as health officer in a field where very great health results have been produced, but they would be small compared with the health results produced by securing for mankind natural wages. It stirs my enthusiasm to think of the glorious opportunities before the young health officer just commencing life. I have spent my sanitary life killing tropical mosquitoes, and, I hope, have thereby benefited my fellowmen. I would give a good deal to spend another sanitary life in the ranks of the coming generation of health officers, doing my share in the fight that is before us, the fight for the greatest of all sanitary measures, natural wages."

Infected unpasteurized milk supplies have, no doubt, added considerably to our tuberculosis death rate. Heavily infected raw milk became an important element in the diet of Europe and America long before sanitation was recognized as a factor in disease control. Only after the eradication of bovine tuberculosis in large areas has its epidemiological significance become apparent as one possible source of human infection.

The United States Department of Agriculture has performed a most valuable service to not only the dairy industry but to the milk consumer as well, due to its aggressive campaign to eradicate tuberculosis among domesticated livestock. June 1, 1932, the Department of Agriculture reported that there were 1,422 counties in the United States where 43.5 per cent of all the cattle were tested and two-tenths per cent or less reacted; 1,415 counties where 44.2 per cent of all the cattle were tested with three-tenths per cent reacting; the remaining 238 counties, where 12.3 per cent were tested, showed an incidence of tuberculosis ranging from 2.0 per cent to 26.0 per cent. The decrease in tuberculosis among cattle during the last ten years in the United States is reported as follows:

Year	*Per Cent*
1922	4.0
1924	3.3
1926	2.8
1928	2.0
1930	1.7
1932	1.4

The area testing of livestock has in many communities in the United States eliminated tuberculosis as a disease infecting cattle. The drinking of infected milk is no longer permitted by the physician or veterinarian nor does it meet with the approval of the consumer. Ordinances for the sanitary production and distribution of milk as well as its pasteurization are becoming more common in every American city.

In England[11] forty per cent of all cattle slaughtered show tuberculosis lesions to the naked eye, while two per cent have tuberculous disease of the udder. Here an average of 6.7 per cent of raw market milk contains tubercle bacilli. It is estimated that there are 2,000 deaths occurring each year in England as a result of this infected milk supply. In many countries pasteurization of public milk supplies and the tuberculin testing of cattle have protected the public from this source of infection.

We have diminished all and discontinued much in our modern life that would have made the transfer of tubercle bacilli possible during the past. The medical profession is now using the tuberculin test for the identification of the early case of tuberculosis in his practice much the same as the veterinarian has used the same procedure in identifying and eradicating tuberculosis amongst livestock. This attempt on the part of the physician now using the skin sensitization test

for early diagnosis is performed with the knowledge that the successfully treated case must be identified as soon as possible following infection.

Treatment initiated before ulceration and drainage with positive sputum gives the physician and his patient a tremendous advantage. The identification of tuberculosis as promptly as possible following infection has added many cases to the ranks of the tuberculous, while we have added much to the case report files in the health department they will have much less to do in the future so far as the issuance of death certificates due to tuberculosis are concerned. The identification of the case at or near the time of first infection has given many infected with tuberculosis an opportunity to maintain themselves in a state of good health during the periods of life when they would have formerly been expected to develop into clinical cases of tuberculosis. The epidemiological study of these positive reactors shows that they can usually be traced to association with open cases, and that the open case contact is the explanation for the high incidence of positive skin reactors.

The opportunity now for the massive ingestion or inhalation of tubercle bacilli has been cut down tremendously in practically all family groups. The relatively small amount of positive sputum still remaining at large can and should be completely prevented from coming into contact with susceptibles. The sanatorium is prepared to perform this major function, the cap stone in any tuberculosis control campaign. By so doing it will become the most important instrument available for the family physician and the epidemiologist in writing the last chapter to tuberculosis control.

Statisticians have, after carefully studying our tuberculosis death rate, foretold an upward turn. The war was to be a great determining factor, yet the war's influence proved to be both limited and brief; now it is the economic depession that, under conditions prevalent at one time, would reflect very definitely in increased death rates from tuberculosis. Today with most avenues of escape of positive sputum to the uninfected blocked, and still more ways for blocking being devised and applied, with an almost complete absence in the transfer of massive doses of infection, there is good reason to feel that we are not far from the ultimate minimum death rate, toward which we should approach without any prolonged or important interruption. Dublin[12] has very well summarized the factors underlying tuberculosis death rates as well as its control when he states, "It is the kind of environment that determines the high and low rate which prevails." We must define and control the elements in our environment which tend to limit the development of chronic illness and killing disease. The factors responsible for the prevalence of tuberculosis as well as those effective in its control are both known and accessible. We have the machinery, personnel, and all the necessary knowledge concerning tuberculosis control. They should be co-ordinated and energized to function.

Summary

The factors primarily responsible for the falling death date in tuberculosis are complex only when the various items resulting in its decline are considered separately as its possible and only cause. The decline is not so complex if reasoning proceeds from the fact that the tubercle bacilli must depend upon human sputum for its spread. That the consistent drop in the tuberculosis death rate results directly from social development making exchange of sputum always difficult, if not impossible.

Conclusions

1. The control of human sputum through the introduction of sanitary methods of living has become the greatest factor responsible for the decline in our tuberculosis death rate.

2. The epidemiological and administrative control of tuberculosis are measures in which society is primarily interested, since they are primarily protective and preventative.

3. The clinical control of tuberculosis is a local problem which should not be taken out of the hands of the family doctor except during a relatively short period when the patient shows evidence of a progressive lesion with positive sputum. Sanatorium care should go hand in hand with isolation and toxemia.

4. The sanatorium must serve the public and the medical profession by being available alike for the family physician and the epidemiologist.

5. Control the sputum of the bacillus carrier and there will be no more than a temporary rise, then only of short duration in our tuberculosis death rate. This regardless of war or famine or the development in the future population of a large group of unexposed susceptibles.

6. The family doctor co-operating with the epidemiologist and other health agencies hold the controlling mechanism in limiting exposure, preventing clinical breakdown and reducing to still lower levels our death rate due to tuberculosis.

7. The "real value of wages" as an indicator of nutrition and housing is, and doubtless will always be, closely associated with consumptive deaths.

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THE PHYSIOLOGICAL APPROACH TO THE PROBLEM OF HOMO-SEXUALITY*

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I MUST first begin by making an apology for two things, first, that not a great deal of coherent knowledge is known about the subject; and second, that of all people, it appears to me, I know the least about the subject. Upon reconsidering it, possibly that is why you chose me as the speaker on this topic.

It might be well to begin with a few fundamental concepts that have been definitely established, and then from them pass over into a theory or two concerning our subject at hand. To begin with, it is considered true by all biologists that the phenomenon of sex is universal. In the higher strata of development all individuals are preponderantly of one or the other. This implies that there is no absolute maleness or femaleness, but that in every male there are some slight characteristics of the female, and vice versa, in every female there are some characteristics of the male. The extent of these variations from our theoretical fixed type is really the subject for our discussion today.

Genetically, sex is determined at the time of fertilization by the sex chromosomes, or really, in view of our more recent knowledge, by the genes within the chromosomes. The sex, as determined at that time, remains with that individual for life, although it might be modified by a number of mechanisms that may subsequently come into play. When the embryo develops to a certain extent an indifferent gonad is formed. Morphologically, from an examination of that indifferent rudiment, one is not able, at this stage, to decide the sex of the individual. But, while we cannot morphologically decide as to which sex that individual belongs, physiologically it is possible to determine this experimentally. For instance, Witchii has been able to transplant fragments of these indifferent rudiments into hosts whose sex has already been determined. When these rudiments grow in their hosts they develop into the gonad that they were destined to become irrespective of the sex of the host. It seems, though, that at this indifferent stage of development the organism is capable of considerable deviation from its predestined sex. During this indifferent stage there are laid down in the organism two systems of organs and ducts, one system for the male and the other for the female generative organs. Which system will ultimately develop depends on the nature of the gonad whose sex, as we have previously stated, has already been determined.

The testis is first to differentiate morphologically. This differentiation with the formation of a definite gonad, brings a second mechanism into play, namely, the sex hormones. Under usual and normal conditions the pattern of the sex hormones and their effects will follow the pattern laid down at the time of fertilization. In other words, if the individual has been predestined to be a male a testis will form and in turn the testis will liberate male sex hormone whose action will be to favor still further the male pattern of the individual and there will be a stimulation of the Wollfian duct system (which subsequently form the male reproductive system) and at the same time a suppression of the Müllerian duct system (which would subsequently form the female reproductive system). The genie pattern is followed by a hormonal pattern in the same direction. One can readily see that a system such as this would lend itself to variation. Supposing one individual has been predestined to be a male, supposing again that the energy of maleness within the chromosomes be less than usual: there will be then developed an individual who is genetically a male, but, at the same time, presents characteristics of the female. This subject has received extensive investigation and corroberation in the hands of Goldschmidt, and he has named these individuals who are thus incompletely differentiated as the intersex type. These individuals are always of one sex or the other but have within them a greater or lesser admixture of the characteristics of the opposite sex, in our case of the female. These intersex types vary in the extent of their intersexuality. The deviations may assert themselves

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very early in embryonic life, or they may first appear very late. It may be stated, in general, that the earlier in embryonic life these deviations occur, the more profound will be the change in the individual. On the contrary, if these deviations should occur later, the change in the individual would be slight, or the deviation from the first pattern very limited.

When the hormones in the embryo begin to play their role, further deviations will occur. Such an interesting development has been described by Lillie in the free-martin. As you very well know, twins often occur in cattle. It frequently happens that when the twins are of opposite sex the newborn female may show marked characteristics of the male such as the development of a male genital tract that is almost complete except for the formation of sperm. Further study of this phenomena has shown that the placentae of these twins have a common circulation and furthermore that this fusion of circulation has occurred during the undifferentiated stage of development. As stated previously, the male gonad differentiates first, hence liberates male sex hormone first. This male sex hormone is transported through the common circulation to the female and her genital system is thereby modified. It is interesting to note that this female individual is never converted into a complete male but always presents the sex laid down genetically at the time of fertilization. This is true no matter how far the deviations have occurred. You can, therefore, see that the genic pattern for sex can be markedly modified by the subsequent hormonal pattern. It appears to be true that as the individual grows older the genic pattern becomes more or less fixed and only becomes modified by unusual circumstances such as tumors or other pathological conditions of the ductless glands.

My concept of the matter is that every human presents predominantly one sex or the other. The absolutely true Hermaphrodite is an extreme rarity for that would imply an exact and even balance between maleness and femaleness. Deviations in the individual can occur in embryonic life so as to form the somatic intersex types and this intersexuality could be of greater or lesser extent depending on whether the deviation occurs early or late in the developmental process. If such a lack of differentiation would involve the highest brain centers (cerebral hemispheres) an intersex type referable only to the brain might result. Such a brain intersex I consider the homosexual. Whether he will deviate psychically or somatically from the normal pattern will depend on the extent of his intersexuality. My notion is that the physical intersex comes first in embryonic life, and the so-called psychic intersex may be the physical basis laid down during embryonic life or be developed later on a hormonal basis.

It was difficult to conceive why a homosexual or, according to my concept, a psychic intersex type could develop later in life. Various theories have been proposed to explain this, but it seems that the fundamental explanation lies in the chemical relationship between the male and female sex hormones. (Slides.) The representative female sex hormone is theelin or folliculin, the hormone liberated by the follicular apparatus of the functioning ovary. The testicle liberates the male sex hormone. Both of these hormones present a common nucleus, and so closely are they related one to another that the conversion of one into the other becomes a distinct possibility both in the laboratory and in the organism. In fact, chemically, such conversion has almost been completed and probably will be so within the next year or two. (Slides.) If testicular hormone can be converted into follicular hormone by the organism and if the maintenance of sexual characteristics in the adult is in part due to the other sex hormones depending upon the sex, one can see that if a male were to convert his testicular hormone into female sex hormone either by converting the hormone directly or by an abnormal development of the common nucleus he would sooner or later present characteristics of the opposite sex and this is precisely the findings that Dr. Richard M. Brickner and I have made in a small group of male homosexuals. These men presented definite homosexual tendencies. Two of them were physically normal males, in fact they were typical "he-men." The remaining four presented definite intersex stigmata. In all of them there was a persistent excretion in the urine of large amounts of theelin or the female sex hormone of the follicle. Normally, minute traces of theelin can be found in male urine, namely, about one Rat Unit to five liters of urine, but in these cases quantities ranging from ten to twenty Rat Units per liter were found, and in one case (a very masculine individual) the amount found was thirty-two Rat Units of ovarian hormone per liter. This hormonal finding was fairly constant and remained so throughout the period of observation. The quantity of theelin excreted by these men was identical with the amount excreted by women during their active sex life. We are, at the present time, examining a group of women homosexuals for the presence of male sex hormone. The technique is long and difficult and, unfortunately, I have no results as yet.

The source of this theelin in these homosexual men is, at the present time, unknown to me. There are several potential possibilities, one of them being the presence of embryonal ovarian rests and another being some abnormality in metabolism, which allows this metabolic deviation to go on. This is understandable in view of the fact that the common nucleus of the sex hormones is also the common nucleus for cholesterol and its derivatives including vitamin D. Some aberration of the cholesterol metabolism could be responsible for the deviation of one hormone into the other. Therapeutically, the thought suggests itself, that if these male homosexuals suffer because of the effects of the large amounts of theelin in their system, one could perhaps gain some advantage by the administration of huge doses of male sex hormone. Adequate amounts are, at the present time, not available but they should be so within the next year or two, for the synthetic production of testicular hormone from a cholesterol derivative has recently been announced.

I again wish to emphasize the inadequacy of my paper and still more the inadequacy of my contribution to the subject. I fear, possibly, that I am treading on a ground which I, as an obstetrician, have no right to be on.

URETERAL OBSTRUCTION FOLLOWING IRRADIATION OF THE FEMALE PELVIC ORGANS*

E. W. Exley, M.D.
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IN SPITE of the fact that radium has been employed for a considerable period of time in the treatment of uterine and cervical carcinomas, as well as in some benign conditions, very little has appeared in the literature regarding its possible affects upon other pelvic viscera. Dean has called attention to injuries of the urinary bladder following irradiation of the uterus in a rather large series of patients. Recently, in the Journal of Urology, Bugbee reported eight cases of ureteral obstruction which came under his observation at the Women's Hospital in New York. In six of his patients a functionless pyonephrosis was removed, one was unoperated upon, while in another instance the condition was bilateral. All of Bugbee's patients had some pelvic carcinoma for which radium was administered.

The case histories of the two patients herein reported reveal that both had uterine carcinomas, one had bilateral ureteral occlusion and died from renal insufficiency and uremia; while the other who is still alive had a marked unilateral ureteral obstruction and an ulcerating bladder lesion. Both patients were treated with an average radium dosage and so far as is known had negative urinary histories prior to the time of their irradiation.

Case No. 1, Mrs. A., a white female, aged 59, upon whom a diagnosis of papillary adenocarcinoma of the uterus had been made on September 22, 1931. At this time she was given 50 mgms. of radium element for 48 hours. Hysterectomy was done on November 12, 1931, at which time there was no evidence of metastasis. Urinalysis done prior to her operation was reported as negative. During the middle of December, 1931, the patient began to have an intermittent back-ache, which was more marked on the right side. She was readmitted to the hospital on December 30, where X-rays of the dorsal and lumbar spine showed no evidence of metastasis. On January 2, 1932, she had a chill and a fever of 100.2 degrees. The pain in the back was more severe and seemed to be localized on the right side. The right kidney was markedly tender upon palpation. The urine showed 2 plus pus and 1 plus blood.

Cystoscopic examination was made on January 4, and showed that the right kidney did not excrete indigocarmine; the left functioned normally. There was a marked obstruction in the right ureter 4 cm. from the bladder. Pyeloureterograms showed a normal kidney outline on the left side. On the right side the kidney pelvis was larger than normal, the terminal irregularities of the minor calyces were dilated and the ureter gave evidence of hyperactivity and seemed to be fixed in its lower third by some periureteral process. The ureter was dilated to 10 F. and the catheter was left in place for 48 hours for drainage. The patient's temperature returned to normal and she was discharged from the hospital.

The patient was re-admitted to the hospital on March 19, 1932, complaining of scanty urine, lack of appetite and of a dull pain in the left flank. She had passed no urine during the preceding 24 hours and had developed a severe headache. Upon examination the patient was drowsy and apathetic and a pitting edema was present over the ankles. The blood pressure was 158/80. The blood urea nitrogen was 46.5 mgs. per 100 c.c. of blood, the creatinine was 3.0 mgs. Cystoscopic examination was done on March 20, and showed that no urine issued from either ureteral meatus. The obstruction in the right lower ureter could not be overcome. An obstruction was met

*Presented at the meeting of the Minneapolis Clinical Club, April 11, 1935.

with about 5 cm. from the bladder in the left ureter, which was catheterized with difficulty. A free flow of very pale urine issued from this catheter but no trace of indigocarmine was noted. Pyelography was not attempted, the catheter being left in position for drainage. The urinary output per ureter catheter for the next 24-hour period was 2,800 c.c., and the condition of the patient was much better. This urine was, however, of low specific gravity. The ureter catheter ceased draining on March 24, and after a 24-hour period the blood urea was 70.5 mgs. per 100 c.c. of blood. The catheter was replaced upon three occasions but all attempts to increase the patient's elimination were unsuccessful and the clinical picture of uremia progressed with coma, convulsions and Cheyne Stokes respiration until the patient expired on April 4.

An autopsy showed that both kidneys were dilated, the right being more marked. In following the course of the right ureter into the pelvis there was a hard fibrous connective tissue mass obstructing its lumen for several centimeters from its entrance into the bladder. On the left side there was a similar obstruction not so marked in degree. The microscopic sections of this periureteral tissue showed no carcinomatous cells to be present. Pathologic diagnosis; bilateral hydronephrosis hydroureters and ureteral obstruction, carcinoma of the uterus.

Comment

The rapid development of the periureteral inflammatory process and of clinical uremia are the outstanding features of this case report. The practical application of ureteral dilatation and drainage by means of the ureter catheter even though palliative in this instance, is well demonstrated. The pathologic findings at necropsy were instructive and revealed the marked kidney destruction which led to such a high degree of renal insufficiency and to death from uremia.

Case No. 2, Mrs. K., aged 62, who had received 50 mgs. of radium element in the uterine cavity for 48 hours in August, 1930. Curretings examined previously showed adenocarcinoma to be present. A urinalysis taken at this time was negative. She was seen by the writer in February, 1931, complaining of frequent burning urination and of some tenderness in the right kidney region. She had noted hematuria on two different occasions. The examination of the urine showed three plus pus and three plus blood. Cystoscopy was done on February 6, 1931. There was a large area of bullous edema in the region of the right ureteral meatus and there was an area of grey sloughing surface lateral to the normal location of the meatus. The functional test showed a delay in the appearance and concentration of indigocarmine from the right side. The right ureter was catheterized with difficulty while the left was catheterized with ease. Pyeloureterograms showed a normal kidney outline on the left side. The right side showed a rather large hydronephrosis. There was some dilatation of the ureter interpreted as being due to ureteritis. The point of obstruction could not be demonstrated on the ureterogram. The right kidney was drained and irrigated on three occasions and the patient was discharged from the hospital on February 28, 1931.

The patient re-entered the hospital in September, 1931, complaining of frequent burning urination. The sloughing area seen on the previous examinations was healed and the ureteral meatus appeared to be located on the margin of a scar. The condition of the right kidney and ureter was much the same as previously and the obstruction in the lower ureter was more marked in degree. The right ureter was dilated and drained on two more occasions and the patient was discharged from the hospital.

The patient was not seen again until July, 1932, when she complained of headache and a dull pain in the left flank. The left kidney was tender on palpation. Cystoscopy showed the condition of the right kidney and ureter to be unchanged, however, there was a marked obstruction to the ureter catheter in passing it through the left ureter. Pyelography was not undertaken. The left ureter was dilated up to 8 F. and the kidney was lavaged for 24 hours.

Comment

The pyelographic picture is primarily one of hydronephrosis and hydroureter and does not demonstrate the point of the ureteral obstruction. This may be assumed to be an aggravation of a pre-existing infected hydronephrosis by an acute obstructive process. The opportunity afforded the observer over an eighteen-month period proved instructive and enabled one to watch the progress of the ureteral obstruction as well as the healing of the co-existing bladder lesion.

Drexler and Howes, in examining a rather large series of advanced cervical carcinoma patients conclude that a large majority of these patients died because of urinary infection and uremia. They attributed this to be due to growth of the carcinoma into the broad ligaments with resulting fibrosis and ureteral obstruction. In their opinion this does not occur with any more frequency now than it did prior to the time radium

was employed. However, the known affects of radium would lead one to assume that some of these broad ligament extensions may be due to the fibrosing action of the irradiation.

Dean classified radium reactions in the bladder as being of three types, according to surface reaction; first, an irritation occurring within 24 hours; secondly, an erythema at the end of about thirty days, which he attributes to a localized vasomotor paralysis, and the third, which has been called a delayed radium burn, is a definite radium affect due to an obliterative endarteritis with secondary fibrosis.

The bladders of Dean's patients were apparently not invaded by the carcinoma and the lesions could not be attributed to the destructive effects of the radium upon malignant tissue. In Bugbee's cases of ureteral occlusion, however, two patients which came to autopsy showed that the carcinoma had extended or had metastasized to the occluded ureter. He speculates as to the possibility of this having taken place in the other members of his series and that destruction with rapid scar formation may have been responsible for the occlusion. He also suffers a possible explanation on this basis for the three uretero-vaginal fistulae which his series included.

Conclusion

The employment of radium in the treatment of cervical and uterine cancer has given results which establish it in gynecological practice. The possibility of ureteral or bladder complications should be borne in mind in order that ureteral obstruction, which may result in the destruction of one or both kidneys, may be averted or anticipated.

When these patients are examined subsequent to their radiation treatment, urinalyses should be made a routine procedure in order that proper urologic steps such as cystoscopic examination or excretory urograms may be undertaken.

In order that the urologic diagnosis may be complete, a biopsy should be made upon all bladder lesions seen after the patient has undergone any form of radiation therapy.

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THE PLACE OF THE COLLEGE PHYSICIAN IN THE EDUCATIONAL PROGRAM*

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New Brunswick, N. J.

THIS paper on "The Place of the College Physician in the Educational Program" is submitted to this convention in perfect frankness. Whatever may appear in the nature of adverse criticism is not to be interpreted as unfriendly judgment of a Dean of Men. That remark is made because of my keen appreciation of the fact that in probably no group or environment in all the world does there exist so little recognition of the virture of attending to one's own business as on a college campus.

In the spirit of good fellowship permit me to acknowledge the part played by the College Physician. His services in the care of the health of our students are invaluable. The development of infirmaries and hospitals at our college centers is to the credit of the men who have served in the capacity of college physicians. The growing interest in a program of education in hygiene that is resulting in the prevention of disease and a far healthier student body is the result of the successful work of the men who have served as doctors to our students.

Without more ado, and because the time element of this paper permits of few frills and fancies, I want to start out by saying that the college doctor is not and can not be an independent unit on a college campus.

The task of the college physician is of such an important nature as to make him an integral part of the whole educational system and, by virtue of that fact, calls for the fullest possible co-operation with the entire faculty and particularly with those of us engaged in personnel work. Certain information comes to the college physician that is invaluable to the man who must deal with the so-called problem student. This does not apply only to the sudent who is failing in his scholastic work; it prevails almost as often with the bright student who is suffering from some affliction that leads not infrequently to social maladjustments. It is our duty to see to it that these students receive such assistance as careful d'agnosis and wise treatment will make available. Viewed from the standpoint of the dean's office, the doctor's recommendations would be an invaluable aid and I am firmly of the opinion that the college physician should submit his recom-

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†Dean of Men, Rutgers College.

mendations even when unsolicited. No professional obligations or undue modesty should act as a deterrent in this vital service.

Such correlation of the work connected with student welfare is sure to bring about desirable results. This co-operation is by no means confined to an administrative office such as that of the dean. It applies with equal force to other departments, particularly that of the department of physical education. It is not a little gratifying to note that physical education is more and more finding its proper sphere. The emphasis on corrective exercise, the stress made on the value of physical training for the entire student body, the opportunities offered to every student for adequate play and recreation, the breaking down of undue emphasis on athletic prowess are developments that offer the Student Health Department an unprecedented opportunity to contribute to a sane and wholesome program of physical education and training that will result in stronger college men who will graduate to another level of action better equipped to carry the burdens that are sure to fall on their shoulders.

In carrying out this program, certain definite and concrete plans are worthy of consideration. The first to be mentioned is delicate in its nature and calls clearly for the spirit of tactful co-operation already mentioned. I would welcome the day when the college physician and his staff should supervise the training of the athletes. This does not imply administration of the Athletic Department, nor technical training of football or any other sport, but it does mean such supervision as would direct each student engaged in athletics toward a healthy program that will develop a strong, vigorous body reasonably assured of longevity expectancy, instead of a burned-out four letter man.

The second is a sanitary survey of the living quarters of the students. In most colleges the dormitory quarters are well supervised, but there are conditions in many boarding houses and even in some fraternities that are far from livable. A survey conducted by the Student Health Department would make available recommendations and data that would help to eliminate the menace to health that now prevails.

The third is a well conducted course in hygiene, carrying college credit. It will mean as much to students to be informed concerning their physical functions and the proper care of this temple of the soul as it will for them to be well informed in any field of science, philosophy or history. Much is to be said for the scholar, but that scholar must live in a world which calls for endurance and inflicts hardships with which only a strong man can cope.

Such a course should not be involved with the existing practice of a weekly lecture by the college physician. I believe that most of you will concur in my opinion that the lecture custom is more or less of a farce and should be abandoned without delay. The course should be of the nature of any other scientific course. It should be a course involving hard work along constructive lines instead of cursory comments embodied in an hour's lecture.

Other suggestions come to mind, but the time allotted for this discussion is limited, and I must speak of what I consider the most important function of the college doctor as well as of every other officer or teacher in our universities.

The college physician is one of a faculty assembled for the purpose of training the youth who come under tutelage in any particular college or university. That statement has in it something of much wider meaning than would be involved in saying that a college physician is a man who has the responsibility for treatment of any physical ills that come under his observation, and call for his attention.

With equal force could such a statement be made before a group of mathematicians, biologists, botanists, philosophers, historians, or other specialists employed in the college. No man who accepts a position on the faculty of a university is justified in the belief that his sphere of influence is limited to the narrow limits of mathematics, history, chemistry or any specific field called for in the complex service rendered by the American University of today.

In all probability no man on the college campus has greater opportunity than the college physician for effective service in this complicated task of the college. In what I have to say, I am not ignoring the values of these special services, but I am convinced that we need to define our objective. That definition can not be stated in any better way than in the much used phrase—the making of a man. In the last analysis, that is the job of those of us connected with our schools today. We are too scientifically minded in our colleges. We have exalted research and worshiped at the shrine of knowledge to such a degree that President Butler of Columbia was led to say in his annual report a year ago that he has grown weary of handing out diplomas to educated barbarians.

That expression is at once an indictment of educational procedure and a pathetic confession of the failure of the college, particularly in view

of the crying need for strong men in a time when fear and confusion are holding the world in bondage from which the world can be delivered only at the hands of virile and intelligent men. Such men should be produced in our colleges and the college physician must play no small part in that achievement.

What is this man we need and we talk about making? I do not presume to a complete definition and I can only suggest for your consideration certain qualities of a real man which the college physician, by virture of his position, can cultivate and develop in these young men and women whom they meet so intimately. We need men of such intelligence as to think one or two things through to the beginning, as Hugh Walpole puts it. We need men of courage who are motivated by adventure and wholesome interest in their fellow men. We need men of stability, possessed of a spirit of industry that will make a man's life on earth a fairly finished job. We need men of refinement who can give to this world the artistry of living pleasantly. In short, we need men of character.

I shall be condemned by a certain school of educators when I say that the things to which I have referred can be indoctrinated, but I contend that is the way real men have been made, and will continue to be made, until the Creator may decide to revise present natural laws of birth and growth and decide to hurl a complete man into the arena of this world to begin his activities fully equipped.

It is astounding to find so little consciousness of this supreme responsibility existing in the minds of the men and women who have been assigned and who have accepted the task of training the youth of America. Not infrequently do we hear some such remark as this—"A college is not a reformatory." The implication of such a statement is that we have nothing to do with getting the kinks out of a boy's moral ideas, nothing to do with rubbing off rough edges of behavior, nothing to do with correcting bad physical habits; and that our job is to teach some particular course and trust to luck for the rest of it—while the rest of it is much the more important, in the minds of parents, at least.

The state has a claim along these lines that the university is bound to respect, whether the institution be private or public. The schools occupy the most strategic position for developing an intelligent and honorable citizenry and every man on a college faculty owes loyal allegiance to discharge the duty of creating the of citizenship which makes for progress and a stable social order.

In this connection I conclude with a word as to the unconscious influence of the character of the physician. I refer to that subtle power that plays its part as an unseen force and passes from one personality to another with the swift sureness that an electric spark passes from pole to pole.

BOOK NOTICE

A UNIQUE AND VALUABLE COMPENDIUM OF PSYCHOSOMATIC LITERATURE

Emotions and Bodily Changes. by HELEN FLANDERS DUNBAR, M.D.; first edition, cloth, 595 pages; New York: The Columbia University Press: 1935. Price, $5.00.

This book, it is allowable, may never be needed even once by the ordinary physician in a lifetime of routine practice. Conversely, it may at some time be needed so urgently that nothing else could be substituted for it. It falls into the category of books written for an extremely close-defined purpose, valuable when that specific purpose is sought out, but unnecessary until the special need arises.

The author has collected all known and relevent literature dealing with the emotions in relation to bodily changes. She has drawn upon the fields of psychology, biology, and clinical medicine, presented through the author's perspective. She has relied chiefly on the now-recognized fact that the emotions play some part (however immeasurable) in influencing the course of diseases. All extant writings which concern this very esoteric field in medicine have been gathered together and presented by her.

That part of the volume which limits itself to a compendium of source material is excellent. When DR. DUNBAR attempts to consider therapeutic indications, in the third part of the volume, she is venturing upon dangerous ground. Although she herself is a physician, with a physician's background of judgment upon which to strengthen her conclusions, the entire field of psychiatry remains today an unstable and imperfectly-understood branch of medicine. There is a fine bibliography, and good indices.

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GRADUATION AND COMMENCEMENT

With another cap-and-gown parade and the distribution of parchments to the deserving, senior medical students have been transformed into bachelors of medicine and hospital internes, while their predecessors in these institutions have become fully graduated physicians and surgeons.

The doctor whose prescribed course of training has been completed is now going out to test his fitness to discharge the responsibilities that must come to him if he would practice medicine in this complex world. In a sense his preparation is over but in another sense it has only just begun. As he becomes called upon to apply his knowledge, he will find that there is still much to learn, and he will do well to adopt the rule of reading-up on every case that comes to him no matter how many similar conditions he may have encountered in the past before or after leaving school. *Study and observation must go hand in hand. It is the joint cultivation of these that begets medical sagacity.* Commencement well names the occasion of graduation.

A. E. H.

ANNUAL MEETINGS

Journalistic reverberations from the Atlantic City convention of the Canadian and American Medical Associations are just coming in. As usual, the major press associations single out the spectacular; and it might seem to some that they had to strain a point to get their kind of stuff. The much read and enjoyed *Time* passed up most of the opportunity, to revive the "upside down stomach" incident, and labor the point of medical ethics, as inferred from the election slate of the Massachusetts Medical Society. The informative but little read weekly *Journal for the Advancement of Science* really worked at a report of the convention, and, as usual, in all fields of science, gave a readable judicious review.

Some may not agree that the press generally reflects a cynical or worse attitude toward the resounding resolutions of all our medical bodies, wherein we lash the whip and stoutly ordain that that which had its origin with Hippocrates shall not be trifled with by political propagandists, not to say hypocrites; and that we shall never surrender the guidance of our guild to any outside officialdom, or words to that general effect! The odd fact remains that we see our own guild members nestling wherever convenient within the cloistered certainty of officialdom. E. L. T.

MEDICAL FEES

News comes from New York—of all places—that physicians are making a concerted effort to meet economic stress by a general reduction of fees. Those who have banded themselves together in this movement have pledged themselves

to a fee of one dollar for an office call and two for a house visit. It is an experiment that should be watched with most respectful attention by the profession throughout the entire country.

The chief reason why so much work has been slipping away from the private physician has admittedly been its increasing high cost to the patient. We have a choice between reducing so far as we can such cost or seeing even more slip away. We can not reduce the cost of X-rays and other material things that patients may require but we should not drive them away by a reputation for exhorbitant charges for the ordinary advise or visit.

If physicians did not give their services free and outright in institutions and charge excessively to make up for it at their offices, philanthropy would not be practicing medicine today.

A. E. H.

THE DOCTOR'S HEART

Why do so many physicians die of heart disease? There must be some special reason due to their environment and occupation. They are subject to all the ills that human flesh inherits and acquires, we know, but there is apparently some additional peril accounting for this prevalence.

They do not more often have endocarditis or valvular disease perhaps, but those cardiac conditions that are difficult of diagnosis and give little warning. Many of our colleagues have dropped off without any premonition whatsoever. Others have availed themselves of electrocardiographic tracings, and are now retired awaiting the inescapable claudication that is on its way, but that no stethoscope could have foretold.

What is it then that makes these rather obscure and treacherous disorders of the coronaries and myocardium prey upon our profession? Is it not because of the unusual strain that physicians must bear; a strain that is unapparent but all the more real because the shock must be absorbed in outward equanimity?

We may ridicule the popular notion that love emanates from the heart, but we can not deny the effect of sentiment and emotions on the heart. Joy and sorrow, anguish, sadness akin to pain, a sympathetic something whether of nervous or endocrine origin does affect the heart. Knowing as we do the doctor's outstanding participation in these by day and night, is it unscientific to assume that they are factors in the disparity?

A. E. H.

SOCIETIES

THE EIGHTY-SECOND MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION

Preliminary Report

June 24, 25, and 26, 1935

On the opening day of the 82nd meeting of the Minnesota State Medical Association more than 700 physicians registered at the main desk in the East end of the Civic Auditorium. Before the convention had closed its doors, more than 3,000 physicians and scientists had thronged the Auditorium, making this meeting one of the most successful in recent years, both in point of attendance and interest displayed.

One of the most outstanding of all medical exhibits was that of Dr. Adolph Hanson, of Faribault, Minn., who with Drs. Arthur Steinberg, L. G. Rowntree, J. H. Clark, and N. H. Einhorn, of Philadelphia, injected thymus extract into rats and then studied the future generations of the injected rats to check body changes which resulted. These rats were on exhibit in their cages, as well as control rats; and the rate of growth, degree of maturation, and general appearance was strikingly different from the controls.

Another medical exhibit which attracted much study from visiting surgeons was that of Dr. Vernon L. Hart, of Minneapolis, who displayed a complete roentgenological exhibit of diseases of the hip. This exhibit contained a great number of X-ray prints, and was closely examined by orthopedic surgeons who attended the meeting.

Dr. S. A. Weisman, assistant professor of medicine in the University of Minnesota school of medicine, offered an exhibit of plaster casts of the chest and lungs, indicating, among other considerations, that a flat chest does not necessarily point to a tubercular involvement of the lungs. Dr. Weisman examined 20,000 school children in 32 public schools of Minneapolis to formulate his accompanying statistics.

Other clinics which drew attention from physicians were those of Dr. A. F. Bratrud, of Minneapolis, who demonstrated the technique of injection therapy for hernia; the clinic of Dr. H. W. Froelich, of the Minneapolis General Hospital, who demonstrated the injection treatment of vari-

cose veins; and the demonstration of Drs. W. A. Hanson and L. H. Fowler, of Minneapolis, who displayed the Elliott treatment for inflammatory pelvic processes.

Dr. William Parry Murphy, of the Harvard Medical School, addressed members of the state association and the American Association for the Advancement of Science on "Diseases of the Blood" in the Northrop Memorial Auditorium. On Tuesday noon, members of the House of Delegates of the state association met at the Leamington Hotel. A meeting of the state council followed at 1:30 on Tuesday.

A special address, "Endocrine Therapy," was delivered by Dr. Elmer L. Sevringhaus, of the University of Wisconsin, on Tuesday at 3:00 p. m.; and on Wednesday morning, the last day of the convention, Dr. Thomas G. Orr, of Kansas City, Missouri, spoke on "Venoclysis—A Consideration of Its Possible Dangers." At 1:00 p. m. on Wednesday, Dr. J. F. Barnhill of the University of Indiana school of medicine spoke on suppuration of the neck, and at 4:00 p. m. Wednesday a Medical Question Court was held by Dr. W. A. O'Brien, of Saint Paul, professor of pathology and bacteriology in the University of Minnesota school of medicine.

The Women's Auxiliary of the state association met at the Leamington Hotel on Wednesday at 5:30 p. m., with a dinner at 6:00 p. m., address of welcome by Dr. J. H. Hayes, president of the Hennepin County Medical Society. At 8:30 p. m. came the entertainment, participated in by Hennepin County medical men and the Auxiliary, followed by dancing.

An unusual feature of this meeting was the fact that the American Association for the Advancement of Science held its annual convention in conjunction with the state association. Headed by Karl T. Compton, Ph.D., of the Massachusetts Institute of Technology, the science association also sent Otis W. Caldwell, B.S., LL.D., Ph.D., of Columbia University, secretary of the association; and Burton E. Livingston, B.S., Ph.D., of the Johns Hopkins University, Baltimore, Md., member of the executive committee of the A. A. A. S. The meetings of this association were held, for the most part, at the University of Minnesota, but the section on medical science met at both the Minneapolis Civic Auditorium and the Mayo Clinic at Rochester, Minnesota.

MINNEAPOLIS SURGICAL SOCIETY

ANNUAL SYMPOSIUM ON MALIGNANCY

Held in the Hennepin County Medical Society Auditorium, Thursday, April 4, 1935

(Continued from June 15 issue)

Case 8—Mrs. J., 73 years of age, was admitted March 19, 1934, because of severe hemorrhage from the bowel. She stated that she had had some bleeding on occassions during the past two years and had lost 28 pounds in weight. Proctoscopic examination revealed a soft elevated carcinoma at the rectal shelf extending up into the sigmoid. She was much emaciated, had a hemoglobin of 50, and electrocardiogram revealed definite myocardial degeneration. She complained frequently of anginal attacks, lasting over two hours.

On March 21, 1934, the growth was thoroughly destroyed by electro-coagulation. She had an uneventful post-operative course and was discharged from the hospital April 1, 1934. Microscopic examination revealed adenocarcinoma, grade 3.

On July 31, 1934, she was again examined and there was some recurrence, or remaining portion of carcinoma found. This was again destroyed by electro-coagulation. She has not been examined since that time but in a communication from her during the past week she states that she is having considerable abdominal cramps. It is probable that she has either a constriction or a recurrence.

Conclusions

1. Electro-coagulation is not intended to replace radical operation in patients who are considered surgical risks.

2. A carcinoma located in the extraperitoneal portion of the rectum, that has not penetrated into surrounding structures, can be completely destroyed by electro-coagulation.

3. If the growth is located in the intraperitoneal area, and is extensive, electro-coagulation can only be considered a palliative treatment.

4. Electro-coagulation is particularly suitable in the aged individual, who is inoperable, and whose life expectancy is short. It is our duty to give them as much comfort as possible during that short period.

ORGANIZATION OF HOSPITAL SERVICE FOR DIAGNOSIS AND TREATMENT OF MALIGNANCY*

F. A. Olson, M.D.

Introduction

AT THE Cancer Symposium held by the society on April 5, last year, an attempt was made to correlate and evaluate all available information regarding the occurrence of cancer in private practice in Minneapolis and the means at hand for treatment.[1] It was brought out that in Minneapolis alone, out of 5,176 deaths, there were 729 deaths reported from cancer in 1932, and now we know that there were 822 in 1933—745 in 1934 (2 pr. day). Further, it was conservatively estimated that approximately 1,000 cases of malignancy were being treated annually in the hospitals of the city, 70 per cent of which were cared for by private physicians. It was further shown, and this is from Dr. Rector's report, that, taking the state as a whole, there were 3,199 cancer deaths in a typically representative year, or one every 2¾ hours. We find that in a thoroughly normal year 3,505 patients with malignancy were seen at the Mayo Clinic—638 of these coming from the state of Minnesota. Hence, it is evident that the state and our immediate locality is no exception to the rule that cancer is rapidly becoming one of the most serious problems, if not the most serious problem, the medical profession has to deal with today.

Those of you who attended the Symposium, "Cancer is Curable," held by the American College last October in Boston, may have heard Dr. Martin[2] report on 150,000 cancer deaths in the United States and Canada for 1933. At the same time he reported from the college records of 1932-33 and 34,—24,440 cancer survivals of cures of five years or more.

The control of the cancer situation should remain absolutely within organized medicine. This fact presents itself as a great challenge to the profession and especially those interested on its surgical side. To allow the problem to drift, as so many medical questions are doing today, presents just one more entering wedge for governmental usurpation and control.

Rector[3] says: "Cancer is a problem for the medical profession and the hospitals, and the interest of the intelligent public should be restricted to strengthening the resources of these two groups. How long the lay activities can be held to this purpose depends on the wisdom and alacrity with which the profession and the hospitals meet this situation."

Pack, R. T.[4] (Mem. Hospital, N. Y.), in his discussion of the organization of a tumor clinic in a general hospital, states: "Cancer is a major health problem which must be met by the boards of managers and the medical staffs of the large general hospitals. No such hospital today can be considered fully efficient unless a well organized cancer service exists within its doors."

Organization

Two national organizations have sensed the battle for a long time. The American Society for the Control of Cancer was organized and has been active since 1913. As you know, this body is simply fact finding and educational in scope. The second is the American College of Surgeons whose "Committee on the Treatment of Malignant Diseases" was formed in 1922. (Two other committees of the college have functioned almost as many years, the Committee on Archives of Malignant Diseases and the Committee on Bone Sarcoma). The personnel of the original committee on Treatment of Malignant Diseases is sufficiently noteworthy to bring to your attention. The chairman was R. B. Greenough of Boston, who had served continuously until his election to the presidency last October; A. C. Broders of Rochester; Burman of Baltimore; Crile of Cleveland; Crowell of the American College; Duane of Boston; Ernst of St Louis; Finney of Baltimore; Lee of New York; Lynch of San Francisco; Miller of Baltimore; Pancoast of Philadelphia; Wells of Chicago; and F. C. Wood of New York. To date this committee has presented the most constructive national program of attack upon the problem. Committee chairman, R. B. Greenough[5] said in October, 1930: "The plan for organization of Cancer Services and Cancer Clinics in General Hospitals throughout the country, which is outlined by the Committee on the Treatment of Malignant Diseases, marks a definite step forward in providing more adequate service for cancer patients."

A few of this committee's recommendations[6] I would like to briefly present to you, with special reference to our local conditions and problems. These recommendations have been published from time to time, the first appearance being in S.G.O. for October, 1930, or about 4½ years ago. *(Slide)* They pointed out that the resources available for diagnosis and treatment of cancer cases at that time were:

I Cancer Institutes.
II Cancer Research Hospitals.
III Cancer Hospitals.

*Read before the Minneapolis Surgical Society in the Annual Cancer Symposium, April 4, 1935.

IV Cancer Clinics in General Hospitals.
A—Complete Cancer Clinics.
B—Diagnostic Cancer Clinics.

It is this last type of tumor clinics that seems best suited as a base for a starting point and which, in possibly a modified form, could easily be made a valuable beginning of better things in each one our larger private hospitals.

I. Of the *cancer institutes* equipped with a hospital and laboratories for research there will never be more than a few on account of the great cost. Examples are: Memorial Hospital, New York; New York State Institute for the Study of Malignant Diseases at Buffalo; The Cancer Committee of Harvard University, with its hospitals and laboratories, Boston; Barnard Free Skin and Cancer Hospital, St. Louis; and the Radium Institute in Montreal.

II. *Cancer research laboratories* are also very expensive and their numbers necessarily are limited. Examples: The Cancer Research Laboratory of Columbia University; The Rockefeller Institute, New York; and Sprague Memorial Institute, Chicago. They are dependent on large endowments and devote their efforts solely toward research.

III. *Cancer Hospitals:* These are state supported or heavily endowed hospitals, such as the one seen in Massachusetts and the Cancer Institute on our campus. Several of these are coming into existence as departments of already established hospitals.

IV. *Cancer Clinics:*

A—A complete Cancer Clinic, according to the recommendations, requires:

1. Organization of a staff of specialists.
2. Adequate diagnostic and therapeutic facilities.
3. Adequate record system.
4. Clerical assistants.
5. Social service workers.

To summarize, such a Complete Cancer Clinic in a hospital should have:

First, as regards to *staff*, there should be a:

a—Chief of Clinic, preferably a member of the Surgical Staff.

b—Representatives from:

1. General Surgery including Gynecology.
2. X-ray therapy experts.
3. Radium therapy experts.
4. Pathologist skilled in tumor diagnosis.
5. Internist.
6. Representatives of all specialties as consultants.
7. Record clerk, follow-up system and social service workers.

Secondly, as regards *material resources:*

a—Instruments and laboratories for all usual diagnostic methods.

b—Pathological laboratory service.

c—Operating services and other ordinary hospital facilities.

d—Adequate service of x-ray and radium.

Thirdly, as to *meetings:*

a—Daily, weekly, or semi-weekly sessions of the clinical staff and a monthly joint meeting with the entire staff.

B—Diagnostic Cancer Clinics:

Groups under this heading could be formed in any reasonably large hospital or group of hospitals where complete service, such as mentioned above, is not yet available. Weekly meetings should be held at first, possibly in conjunction with or in nature of an extra-special clinico-pathological conference: Practitioners could be encouraged to bring patients to such a conference where group judgment might be obtained and where the practitioner would later be free to continue the care of the patient as he saw fit.

The Committee of the American College recommends that the personnel of such a diagnostic clinic be as follows:

1. A director, preferably a surgeon with some facilities of leadership, together with good technical training, knowledge of the subject and enthusiasm.
2. One or more surgeons.
3. Pathologist.
4. Roentgenologist.
5. Internist.
6. Gynecologist.
7. Dermatologist.
8. Urologist.
9. Gastro-enterologist.

A suitable staff of consultants should be chosen, together with such clerical assistants, as are usually obtainable in the average hospital. The house staff could be used to advantage in many ways. It is easy to see how even a flexible and rather loosely knit organization, such as this, could be *incorporated* and hence be in position to receive bequests with the purpose of later establishing a complete cancer or tumor clinic such as outlined in the recommendations of the college.

It is certain that once a working group even of this simple nature was organized in the average medium sized or larger hospital it would not be abandoned but would continue to grow.

As W. W. Keen, in one of his favorite expressions, would say—"Now that I have seen it I cannot be without it."

The clinico-pathological conference so ably conducted by Dr. C. R. Drake at the Swedish Hospital is a good example of a foundation upon which such a diagnostic tumor clinic could be built up with very little alteration and enlargement. Soon it could easily meet every requirement laid down by the college, as a fully approved cancer clinic.

Advantages

The establishment of a diagnostic tumor clinic such as set forth would seem like a logical first step. Enlargement of the scope and additions could be made from time to time as a matter of natural growth. Some might maintain that the set-up, as outlined by the College, is too advanced for us at this time. Almost any hospital has the personnel and equipment for such a service. A little more concentrated attention by the management and inauguration of a bit more special service by the Staff group, as outlined, would greatly augment the efficiency of the hospital in the campaign against carcinoma. That the professional prestige of the hospital would be enhanced is only too evident.

The effect of the American College program has been dramatic. In 1920 there were 14 cancer clinics in the United States. The February, 1932, report showed:

Approved—American College of Surgeons, 100.

Recommended for approval—58.

In process of organization—185.

By February, 1935:

Approved by the American College of Surgeons—181.

Not ready to report—58.

Signified their contemplation of formation—80.

To quote Dr. R. T. Pack[4] again, he says that "In his opinion there can never be too many diagnostic clinics in any city."

While this movement towards the establishment of the diagnostic tumor clinics has spread over many centers, as yet it has not influenced the managements or staffs of any of the private hospitals in Minneapolis forcibly enough to bring action. The hospitals conducting approved cancer clinics in our section of the country are reported in S.G.O., February 15, 1935,[7] Minnesota has three:

Minneapolis, University Hospital.

Rochester, Mayo Clinic.

St. Paul, Northern Pacific Benefit Association Hospital (provisional).

Iowa, North Dakota and South Dakota, none.

Montana has one at Butte, the Murray Hospital.

The inference from this report would indicate that there is plenty of opportunity for further development in this district.

I would like to briefly mention a few more of the many advantages that could accrue from a well organized tumor clinic:

1. Better Service

The patient would receive a more comprehensive study and more efficient treatment.

2. Educational Value

First, to the Public:

It has been the experience where tumor clinics have been established that patients begin to come in earlier and earlier for examination. In other words, at a time when the diagnosis is more difficult and treatment easier, rather than when the diagnosis is easy and the treatment most difficult. The prevailing feeling of pessimism in the community has been found to diminish in proportion to the activity of the diagnostic group.

Second, to the Hospital:

Frequent reports could be made to the staff as a whole.

Better records and follow-up would be obtained.

Incidentally, the College has made a most comprehensive set of record blanks for this purpose. Some eighteen different forms for the various types and locations of malignancies.

Third, to the Profession:

The diagnostic skill, both clinical and pathological, of any group working under such an arrangement would rapidly be increased by the greater experience in actual observation and study of all the tumors and pathological material passing through the hospital. Bloodgood,[8] in an article appearing in the Canadian Medical Association Journal for June, 1933, touches on this point. He says, "The profession has never been taught the essential facts in the diagnosis and treatment of carcinoma, *in the earliest*, the *most innocent* and the *most difficult* stage to diagnose."

Further, such a diagnostic tumor clinic could instill a working knowledge of the effects of radiation therapy in the immediate group and the professional staff as a whole that would tend to dispel the present pessimism and lethargy as regards cancer prognosis which is everywhere quite evident among medical men. It is axiomatic that the interest of anyone is stimulated and maintained in any field in direct proportion to his *knowledge*, *skill*, and *training* in the subject.

X-ray and radium therapy is the most highly specialized form of treatment known to medical science today. In the past it has been and is now

shrouded in more than a small amount of mystery. The profession has often not availed themselves of its benefits as readily, persistently, and early enough to produce the maximum benefit to their patients.

More and better palliative care both as regard irradiation and other special treatment would be made available and carried out for the inoperable and the otherwise hopeless cases. I have reference to the analgesic effect of X-ray and radium, chemo-therapy with heavy metals and the use of dilaudid, etc.

Past experience in irradiation has always shown that, as technique and equipment are improved, end-results improve in a direct ratio. It is to be hoped that with the installation (one now being actually under way) of the new 400,000 volt constant potential X-ray machine which gives a beam closely approaching the Gamma ray of radium, this city will see less and less of the hopeless feeling in regard to cancer in both the profession and laity. It has been stimulating to me, and I am sure it will be to many of you, to realize that soon a weapon of such power, in the war on cancer, will soon be available to the private patient of the ordinary practitioner in Minneapolis. A machine of 400,000 volt constant potential develops the same length of beam as one of 650,000 volts with pulsating energy. In this connection, may I quote a statement by Mudd, Emery, Meland and Costolow[9] (A. Journal Roent. & Rad. Therapy—April, 1934) "At the end of three years of experience at the California Institute Tech. and the treatment of 285 patients, we are of the opinion that heavily filtered radiation at 600,000 volts or higher seems to offer better possibilities in the treatment of certain types of deep seated cancer than irradiation at substantially lower voltages. The results compare favorably with those produced by a 4 G.M. radium pack."

We, of the Surgical Society, would like to believe that the installation of such expensive X-ray equipment has been stimulated materially by the agitation we have created by our several Annual Cancer Symposia. Again, we would modestly like to believe that the "Tumor Registry" instituted last year in the city of St. Paul may have derived some stimulus from this same agitation.

REGISTER NO..... .... RAMSEY COUNTY MEDICAL SOCIETY Saint Paul HOSPITAL NO..... .....

TUMOR REGISTRY
(For All Malignant Tumors)

NAME PHYSICIAN DATE

Address Hospital

Sex Age Race Married Pregnancies Occupation

PRIMARY GROWTH: Location Size *(check)* Hard ( ) Soft ( ) Pain ( ) Adherent ( ) Free ( )
Extent
Date, first noticed by Patient Date, first recognized by Physician
Date, Physician first consulted Date, operation first advised
Date of first operation
Preoperative Diagnosis
History of Trauma

DIAGNOSIS: *(check)* Clinical ( ) By Operation (gross) ( ) By Biopsy ( ) By X-Ray ( )
TREATMENT: Simple Excision ( ) Radical ( ) Cautery ( ) Radium ( ) Roentgen Ray ( )
METASTASIS: Location Date, first noticed
COMPLICATIONS: Location Date, first noticed
SECONDARY OPERATION:
DEATH: Date Cause
NECROPSY: Primary Site Metastasis
FAMILY HISTORY of Malignant Tumors:

REMARKS:
Please make a duplicate card for the Registry File.
Check carefully; furnish accurate dates.

..... ATTENDING PHYSICIAN

PATHOLOGICAL REPORT: SLIDE NO.....
GROSS
MICROSCOPIC
DIAGNOSIS

..... PATHOLOGIST

Please make a duplicate slide for the Registry File

FOLLOW-UP DATA (Dates)
Well
Recurrence (Local)
Metastasis
Death
Autopsy Findings
Remarks

Conclusions

1. The local incidence and importance of the cancer problem is cited.

2. The organization of hospital service in the campaign against malignancy is outlined.

3. The advantages of the Cancer Clinic as recommended by the Committee on the Treatment of Malignancy of the American College of Surgeons are enumerated.

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PROCEEDINGS
MINNESOTA ACADEMY OF MEDICINE
Meeting of April 10, 1935

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The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 10th, 1935. The President, Dr. A. R. Hall, in the Chair.

The meeting was called to order at 8:15 p. m. There were 57 members and one guest present.

Minutes of the March meeting were read and approved.

The President announced that the Executive Committee had discussed and approved a suggestion of having a social meeting of the Academy in June, and that Dr. Wilcox had offered his summer home at Ripplside for the meeting place. A motion was carried that such a meeting be held and that the Academy thank Dr. Wilcox for his offer.

The scientific program followed.

★ ★ ★

Gross Structural Changes in the Adult Heart and Aorta As Seen in the Roentgen Ray Film and Their Correlation with Clinical and Autopsy Findings

Dr. Alfred Hoff
St. Paul

Dr. Hoff read his Inaugural Thesis with the above title. Numerous lantern slides of cases were shown.

Abstract

The heart shadow contour gives valuable information in definitely diseased large hearts because with enlargement there is usually an accompanying change of form.

Although it merely reveals evidence of gross structural change which is usually impossible of correction, it does aid materially in the establishment of exact diagnosis and accuracy of prognosis which is so essential to the intelligent care of cardiac patients.

When estimating the significance of a shadow heart contour, the factors which normally influence its size and shape must be given due consideration. Such factors are: height, weight, race, age, the position and contour of the diaphragm and structural deformities of the thorax. Also, the divergency of the Roentgen ray must be overcome by using a six foot film distance.

An attempt is made to illustrate by the shadow contour of the heart and great vessels alone, the changes occurring as a result of disease and to correlate this picture with the clinical and autopsy findings, when possible, without resorting to fixed cardiac measurements.

The cases shown are such as have been under personal observation for variable periods of time.

The normal shadow heart contour is explained with regard to the structures forming its left and right contours. These structures are so-called bows; the right auricular and the ascending aorta forming the right border, while the aortic knob, pulmonary artery, left auricle and left ventricle forming the left border.

General opinion usually holds, however, that, when the pulmonary bow or the left auricular can be definitely identified, the heart is abnormal.

Gross structural changes in the heart and aorta affecting these various bows independently and jointly, are shown by lantern slides, with cases, giving the history, clinical and postmortem findings.

1. The contours of compensated and decompensated mitral stenosis are illustrated and the mechanism of their production explained.

2. Moderate and marked pulmonary bow prominence, indicating a dilatation of the pulmonary artery and usually regarded as typical of a patent ductus Botalli, may be caused by a mitral stenosis and Ayerza's disease, while a patent ductus may exist with only a slight increased prominence of the pulmonary arc. Illustrative cases with autopsy findings are given.

3. Combined valvular disease. The type of contour is determined by the preponderating lesion present. Illustrative cases, with autopsy findings, are shown in combined mitral and aortic stenosis; combined mitral, aortic and tricuspid stenosis, and the triple combined with pericardial adhesions; also, of mitral stenosis associated with severe grade of hypertension.

4. Pericarditis with effusion. Illustrative case with autopsy findings, showing condition shortly after onset and subsequent massive effusion due to tuberculosis.

5. Contours of supra cardiac shadow. Cases shown of (1) syphilitic aortitis; (2) aneurism of ascending aorta with autopsy findings; (3) diffuse dilatation of the aortic arch, caused by atherosclerosis and syphilis, with autopsy findings.

The importance of the clinical history and progress with the impossibility of a differential diagnosis from the shadow contour alone, is stressed, in atherosclerotic and syphilitic dilatation of the aortic arch.

An attempt has been made to correlate, without resorting to set cardiac measurements, the Roentgen ray shadow contour of clinically observed large heart in adults, with the clinical symptoms and autopsy findings, in an effort to appraise its merits in the diagnosis of the cardiac cases selected.

1. A knowledge of the significance of such contours permits the clinician to obtain rapid information with fluoroscope alone, and, by the use of the orthodiagram, a quick permanent record both of the heart shape and size.

2. It is particularly useful in the combined types of valvular lesions, where auricular fibrillation and congestive heart failure have changed the characteristic murmurs and obscured the type of heart failure.

3. The fluoroscopic screen permits of a rapid and accurate method by which a dilatation of the aortic arch or the pulmonary area can be determined.

4. It offers an accurate method for determining changes occurring in the size and shape of the cardiac outline during the progress of disease, being especially useful in pericarditis with effusion.

5. In determining cardiac function, it offers little help.

6. It may be said that the Roentgen ray shadow heart contour is a valuable accessory method in the diagnosis and care of heart disease when combined with the clinical symptoms, findings, and the electrocardiogram.

7. In those painful types of heart disease where, often, all methods of exact diagnosis fail, it is well to remember the advice of the elder Dr. Janeway, who, in discussing angina pectoris, said that, when he "disregarded the patient's story and relied solely on his own calm judgment, he usually made a mistake."

I wish to acknowledge my indebtedness to Dr. John F. Noble and Dr. Kano Ikeda for the autopsy records of these patients.

Discussion

Dr. A. R. Hall (St. Paul): I think we will all agree that this is one of the most instructive and nicely executed theses we have had. The correlation of the clinical history, the physical findings, the electrocardiogram, and autopsy findings with the different shadows of the heart contour brings out very well the diagnostic evidence which may be obtained from an x-ray study of the heart.

Dr. Carl B. Drake (St. Paul): I enjoyed Dr. Hoff's presentation very much. I was particularly interested in hearing Dr. Hoff state that it is impossible to make a definite differential diagnosis between an arteriosclerotic arch and a luetic aortitis from the x-ray shadow alone. I recently saw a patient whose ascending aorta appeared markedly widened in the x-ray film, but whose Wassermann was negative. Inasmuch as the Wassermann is not 100% reliable, it is therefore not possible to make an accurate differential diagnosis in all cases.

Dr. Hoff referred to the bulge in the left border of the heart shadow which is usually considered typical in a case of mitral stenosis. I had always thought this bulge of the shadow was caused by a dilated left auricle. There is good reason to believe that this is not the case and that this prominence is the result of hypertrophy and dilatation of the right ventricle. I would be much interested in knowing Dr. Hoff's interpretation of this prominence in cases of mitral stenosis.

Dr. S. Marx White (Minneapolis): This very meaty presentation by Dr. Hoff tempts one to go perhaps too far afield, but, in discussing it, I should like to present two concepts and two methods I have been using with a great deal of satisfaction, to myself at least. They have helped in making more accurate the diagnosis of conditions in the heart and aorta, and in watching their progress. The first concept is that, in the regions where the heart and great vessels are covered by pericardium, the outline is in fact that of the pericardium. If one retains that concept it leads directly and at once to search for evidence of effusion or other material within the pericardial sac. True it is that when the pericardial sac contains no excessive amount of exudate or tissue, the cardiac outline itself is revealed. The second concept which seems to me of importance is that the so-called right border of the aorta as seen in the mediastinal shadow above the heart is practically never the right border of the aorta but has as a complement the shadow of the right innominate vein superior vena cava. This venous shadow lying to the right of the aortic sinus may be very narrow or thin, and, if the veins are not dilated, the outline seen corresponds practically to the right border of the aorta. If, however, the innominate vein and superior vena cava are over-distended their shadow determines the form taken by the outline on the right, and may make up a considerable part of the width.

I am particularly in accord with Dr. Hoff's conservatism in the interpretation of these x-ray silhouettes so far as they contribute to our diagnosis of valvular lesions. The x-ray shadow reveals certain changes in the size and outline of the great vessels and of the chambers of the heart, but we do not see the valves. The changes seen may lead to inferences as to the valvular lesion causing the distention of a chamber or a vessel, but inferences are not diagnoses, even though the x-ray silhouette quite often makes up a large part of the data on which a diagnosis is founded. I emphasize this caution because it is too common for the roentgenologist to make a diagnosis stating a valvular lesion rather than the size and type of cardiac outline, and too common for the patient, the hospital clerk, intern or resident, and the physician to accept such laboratory diagnoses without giving them only a part in the summation on which a true diagnosis should be based.

In addition to the concepts outlined, there are two methods which I have found to be very useful. The first method is the use of the fluoroscopic shadow which, though somewhat simpler and not as perfect in its interpretability as the orthodiagram, takes much less time and gives valid records of progress from time to time in the same case. I had Dr. J. B. Carey devise a frame on which a fluoroscopic screen could be drawn out to a distance of five feet from the target. Drawing it out and making a careful outline with a glass pencil, then transferring that to tracing paper, gives a very good permanent record of the heart outline and size; also it saves the time necessary for an orthodiagram and the expense of an x-ray film. The second method to which I wish to refer was brought to this region by Dr. L. M. Rigler. It is a method of obtaining the width of the shadow of the aortic arch, by putting in the esophagus a bolus of thick barium-containing material. It gives a very useful impression of the actual aortic width measured from the left side of the aortic arch to the left side of the shadow of the barium-filled esophagus. The parallax is relatively constant, and the method very often gives usable evidence as to the diameter of the aorta at that point.

Dr. C. B. Wright (Minneapolis): This thesis emphasizes the importance of routine x-ray examination of the heart. Many men feel that the orthodiagraph is more accurate than the six-foot plate. Both procedures give more information than either one alone. Repeated examination over a period of years may bring out interesting changes in appearance of the heart outline which are of value. How long it takes to develop the configurations characteristic of the lesion is important if we are going to use the shadowgraph to make a diagnosis of an early lesion. There is not much definite information on this point. The same author referred to by Dr. Drake, I think we mean Polesvki, claimed that as the right heart enlarged the heart rotates to the left and one sees the shadow of the right ventricle on the left side. This makes the lower part of the straight line on the left. As the left auricle enlarges it enlarges posteriorly and to the right and, where it is much enlarged, one sees the shadow of the left auricle extending out to the right side of the heart. This may become very large and be confused with a mediastinal growth.

Dr. Hoff (in closing): I was very much interested in Dr. White's comment about the aorta and in Dr. Drake's question.

At Wenckebach's clinic in Vienna, Dr. Herman Rösler, who is now at the Massachusetts General Hospital, taught that as the left auricle hypertrophies it becomes posterior, while the hypertrophy of the right ventricle rotates the heart to the left on its axis and what we see on the left border is the conus pulmonalis and not the left auricle.

The left auricle may be so enlarged as to be seen on the right heart border; so that there may be two curves, (1) the right auricle, above; and (2) the left auricle, below.

Non-Operative Treatment of Localized Perforations of the Duodenum*

Owen H. Wangensteen, M.D.†

Abstract

Perforation is one of the tragic complications of ulcer. Its occurrence demands immediate operation for closure of the perforation. The immediate and great disability together with the intense rigidity of the abdominal muscles serve to identify it. True surgical shock does not attend perforation. In cases observed some hours after the occurrence of perforation, the rigidity of the abdominal muscles is frequently considerably less owing to the dilution of the irritant by secretion from the serous cells of the peritoneal surfaces.

The simplest operative procedure is the best, viz., mere closure of the perforation. Circumstances which will compel the performance of gastroenterostomy or gastric resection are most unusual. With the post-operative employment of gastric siphonage, slight obstruction, occasioned by the closure of an indurated pyloric ulcer, may be well controlled.

The factors which determine the mortality of perforation are (1) the delay intervening between its occurrence and closure of the leak. Cases operated upon within the first six hours are subjected to least hazard. After 12 hours there is a steadily mounting risk, which, after 24 hours, becomes formidable. (2) The size of the perforation. (3) The status of digestion at the time of perforation. (4) The general physical condition of the patient.

This report concerns four patients with late duodenal perforations, one of which was due to trauma (kick by horse), and the other three to ulcer; all healed under conservative management by suction applied to an inlying duodenal tube. The ulcer perforations were essentially late cases in which some localization had probably occurred; at the time of admission they presented diffuse abdominal findings and their general physical status was not good. They were not the mild "formes frustes" type of case described by Vaughn and Singer. Two of the patients recovered following the development of a subphrenic abscess. The third died 14 days after entry into the hospital of diffuse peritonitis. At the time of her admission the perforation had been present 28 hours. The temperature was 102.2° F. and the pulse rate 134. The traumatic case exhibited gas around the cecum and kidney, indicating that there had been gaseous escape from the retroperitoneal duodenum. He convalesced satisfactorily following the institution of gastric and duodenal suction.

During the past four years, four patients with the clinical picture of perforation due to ulcer, in whom no gas could be demonstrated below the diaphragms on an x-ray film taken in the erect posture, have been treated conservatively without operation. All came early, but it was felt that failure to demonstrate free gas in the peritoneal cavity indicated that the perforation had already become sealed off. These patients were all known to have ulcer, and in 1927 I had closed a perforation for one of them. An additional patient with a "formes frustes" type of perforation of more than 24 hours' standing, has also been successfully treated without operation.

Studies on pneumoperitoneum by Drs. Paine, Rigler, and the writer indicate that a very small amount of gas below the diaphragm may be visualized on a roentgen film exposed with the patient erect. Frequently three to four cubic centimeters may be definitely seen; occasionally 20 cubic centimeters has to be injected before it may be demonstrated between the liver or stomach and the diaphragm.

Dr. Bowers and the writer have established perforations in the antrum of the stomach in a number of laboratory animals (unsutured incisions one centimeter in length). If these punctures are made when the stomach is empty, it is survived in 100% of the animals; if done when the stomach has food in it, the mortality is 86%.

These observations suggest that the first therapeutic procedure to be employed in the treatment of perforation due to ulcer should be evacuation of the stomach contents with a duodenal tube. Then the perforations should be closed as soon and as simply as possible, continuous suction being employed after operation to keep the stomach empty. It is a good plan to take a film in the erect posture in any patient suspected of having ulcer perforation. In my experience, patients exhibiting no gas below the diaphragm may be treated safely by conservative means. Patients with the "formes frustes" type of perforation coming after 24 hours may also be treated conservatively without anxiety. Patients coming late with diffuse findings, but in whom the occurrence of localization is probable, are in my opinion more secure with conservative treatment than with operation. Patients with late perforation in whom leakage is probably still occurring, as indicated by the presence of a large pneumoperitoneum, should be subjected to operation despite the enormous risk, granting that their physical condition permits.

Discussion

Dr. Arnold Schwyzer (St. Paul): Dr. Wangensteen's observations are very interesting. One of the points he raised was that he had never seen shock in perforated ulcer. This may surprise some men, but it is a fact, at least in the early cases. The late Dr. Deaver made this always a very strong point in differentiating between acute pancreatitis and perforating ulcer. In the latter the pulse is even bounding, while in an acute pancreatitis there is great shock with weak pulse and an agonizing distress, the patient sensing impending death. An important point brought out by Dr. Wangensteen's report is that a case of gastric or duodenal perforation can be quite advanced and beyond surgical help when we see it, and still we should not make an absolutely hopeless prognosis.

I recall a case of a man 32 years old on whom I operated in 1902. Three or four years before he had been desperately ill from an acute perforation of an ulcer. Dr. Wheaton, who was then professor of surgery, was consulted but he declared the patient too far gone for any surgical attempt. The abdomen was like a drum and distended to its limits. The patient, however, did not die, but improved slowly. When he later came to us he had been suffering from constant distress, retention and, at one time, a very severe hemorrhage. A gastroenterostomy relieved him and he lived for 30 years, dying two years ago from what was reported to be high blood pressure. The reason I mention this case is this: When we opened the abdomen three or four years after that severe illness, a picture presented itself which remained vivid in my memory. There were diffuse adhesions, especially of the omentum to the anterior wall of the peritoneal cavity, and hundreds of minute white nodules like a miliary tuberculosis. But, remembering the history of the case, we felt that this was due to a perforation of an ulcer and on microscopic examination were able to verify it. In some of the nodules we found a vegetable fiber, in others an oval vegetable cell, and in some nothing was seen. This was a pseudo-tuberculosis caused by the seeding in of gastric, or rather duodenal, content.

Thus we have here a case of perforation of an ulcer into the free abdominal cavity. The patient, an otherwise strong man of 32 years, though not operated upon and probably because he was not operated upon at that desperate time, made the grade and lived 30 years after our gastroenterostomy in comfort, about 34 years after

*Complete paper to be published elsewhere.

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the perforation of his pyloroduodenal ulcer into the free peritoneal cavity.

When a patient gets a perforation, especially of the duodenum, the amount of gastro-intestinal content is, of course, a considerable factor. The stomach is known to destroy the bacteria in the chyme, but it does not destroy all the bacteria. The coli group, the cholera bacillus, typhoid bacillus, and the bulk of the other germs are rendered harmless, but the staphylococci, albus, aureus, flavus, etc., are not destroyed. I saw cultures of staphylococcus aureus given a patient with a gastroenterostomy, and the contents of the stomach, after plugging the opening for a proper time, contained the staphylococci in large quantities. All this refers to a normal gastric juice with normal or high acidity.

Dr. C. B. Wright (Minneapolis): Dr. Wangensteen's suggestion that a perforation of the stomach when it is filled may be more dangerous and increase the risk, suggests to me one of my earliest cases in practice, a servant girl seen in 1904. She had had "neuralgia" of the stomach. Shortly after eating a hearty breakfast she started to walk upstairs, suddenly cried out with pain and fell in complete collapse. I saw her very soon, within 30 minutes. She apparently was in shock, very pale, rapid thready pulse, cold perspiration, and had a subnormal temperature. She was sent to the hospital and operated on within the first two or three hours. She had an anterior wall perforation as large as a dollar and the entire content of the stomach was in the peritoneal cavity. Dr. Ringnell operated and closed the perforation with mattress and purse-string sutures and washed out the peritoneal cavity with gallons of salt solution. The stomach contents showed meat, potatoes, and bread and butter, and undoubtedly could not all have been eliminated. The abdomen was closed and she recovered, although her convalescence was slow and complicated by phlebitis in one leg, an abdominal wound infection, and right-sided pneumonia. She is still living. She has never had any trouble with her stomach but has since had a gall-bladder operation.

I approve Dr. Wangensteen's position in these late perforations of the duodenum. I have seen cases, operated on late, with very small perforations with localized peritonitis, who died, who might have recovered had they not been operated on.

Dr. A. R. Colvin (St. Paul): The recital of Dr. Wangensteen's cases showed again the great variability of the reaction of individuals and individual tissues under apparently similar conditions. I was glad that Dr. Wangensteen always advised suturing a perforation into the free peritoneal cavity. Just whether the perforation occurs into the free peritoneal cavity, we cannot say. However, this is the rule, so that, other conditions being favorable, we should always operate in cases seen early.

I recall a case in which I sewed up some 15 or 20 wounds in the small intestine due to bird-shot. When I got through I was rather impressed that probably it was unnecessary to sew up any of them; there was no leakage and they would perhaps have closed themselves after the fashion of valves. I operated on a young boy one time who was shot through the stomach; in the x-ray the bullet was shown back against his spine. At operation I found only the anterior opening in the stomach and was unable to find the posterior opening. That boy got well. The opening in the posterior wall of the stomach took care of itself.

One of my first experiences in perforating ulcer was in a young man who presented the picture of general peritonitis, almost pulseless, with blue lips and fingertips, and seemingly in extremis. His symptoms began 36 hours before I saw him, and I concluded it would be useless to do anything. His poor old mother stood by and looked so appealingly at me that I told her if she wanted to take a 1 to 1,000 chance I was willing to take it also. We sent the boy to Ancker Hospital. Not being able to say whether his peritonitis was due to a perforated ulcer or a ruptured appendix, I made a right gridiron incision, and air and fluid came out with a hissing sound. An upper abdominal incision was then made and a perforation of the duodenum sutured; another incision was then made in the left lower abdomen and drainage instituted in all three openings, and, although a lot of fluid was obtained through all three openings, there must have been still a lot left; and there was no post-operative drainage. The boy got well and I operated on him about 15 years later, doing a gastroenterostomy for an obstructing ulcer.

One of the points brought out by Dr. Wangensteen is that the peritoneal cavity takes care of some of these perforated ulcers, or, rather, that it walls off and isolates the extravasated material; and Dr. Schwyzer's case illustrates the amount of stomach contents that the peritoneal cavity will take care of. There was practically no postoperative drainage in the case reported above and the peritoneal cavity still contained a lot of extravasated material and yet the boy got well. Dr. Wangensteen's cases prove that the perforation becomes sealed up at times and that a peritoneal abscess may result and be opened later. If one knew that a localizing process would occur, it would be very rational to let it localize and open later, but they are not all quite so fortunate as Dr. Wangensteen's cases were. I operated on a man for perforated ulcer and sutured it. He did not do so well, and while I was speculating as to the nature of the postoperative complication, a subdiaphragmatic abscess ruptured into a bronchus and he recovered. It would have been much better if I could have located the abscess and opened it. In another exactly similar condition I "beat Nature to it" and opened the subdiaphragmatic abscess, and that patient also got well. While Dr. Wangensteen's cases are interesting and very instructive, I feel as he does, that when we see a perforation early it should be operated upon at once.

That a perforating ulcer may not cause so very much trouble is illustrated by a case at Ancker Hospital. While I was attending a conference at the hospital, an intern came in saying that a man was in a bad condition from a perforated ulcer. When seen by several of the staff about 15 minutes later, we were all impressed with the fact that the man's condition was not so severe as the intern had indicated. X-ray showed quite a lot of air beneath the diaphragm. I discussed operation with him but he refused, and in a short time he left the hospital perfectly well. Another similar case presenting about the same picture was not operated; he later developed a subdiaphragmatic abscess and was operated with success.

I feel that these cases will have to be dealt with individually and according to the experience and judgment of the individual surgeon.

Dr. R. T. LaVake (Minneapolis): Dr. Wangensteen emphasizes, in his paper, the characteristic rigidity of the abdomen with its bearing on diagnosis. I would like to report a case that shattered my feeling of confidence in my ability to diagnose a perforation under all conditions.

This woman in the sixth month of her pregnancy developed a pre-eclamptic toxemia and for the last three weeks of the sixth month was in the hospital under intensive treatment. During this time she complained of desultory epigastric pain that we considered a manifestation of the toxemia, as she had never had the pain before in her life and had never given any evidence of previous gastrointestinal disturbance. Due to the precariousness of her toxic condition and her earnest desire to get a live child, we did not subject her to gastrointestinal studies. At precisely the beginning of the seventh month of pregnancy the membranes ruptured spontaneously and she delivered, normally, a live premature baby. During gas anesthesia, toward the

end of delivery, the anesthetist said she had stopped breathing. Under artificial respiration she snapped out of this condition and, after delivery, was put back to bed in apparently a normal condition. This was about 4 p. m. The next morning she complained of a bit of abdominal discomfort, which she said had bothered her through the night, although the special nurse had noticed nothing unusual. Her abdomen was moderately ballooned but there was no rigidity and we thought it was a gas retention problem, a condition not very unusual after labor. About 2 p. m. that day she had acute abdominal pain followed by marked distention. No rigidity could be made out and the condition was attacked with enemas. She went from bad to worse and died just 36 hours from the time of her delivery. The diagnosis was mesenteric thrombosis.

At autopsy it was found she had a perforation in the duodenum. The lesser sac of the peritoneal cavity had a shaggy lining looking almost like an abscess cavity. The greater sac was inflamed and full of intestinal contents. I believe this rupture occurred under the anesthetic during her delivery.

I have never reported this case because it is so unusual that I did not think it would help anyone. The absolute lack of the type of rigidity that Dr. Wangensteen so correctly emphasizes, threw me off the track and the possibility of perforation was not even suspected. This case suggests that epigastric pain in toxemia of pregnancy warrants extensive gastrointestinal studies and should not be positively ascribed to the toxemic condition.

Dr. Wangensteen (in closing): What Dr. Schwyzer had to say of the encapsulated nodules in the peritoneal cavity interested me very much. In the patient operated upon remotely in this series, there was a similar finding. We were uncertain whether these nodules were the vestiges of an old healed peritoneal tuberculosis or the residual evidence of the escaped duodenal content, until the microscope showed the presence of the foreign body reaction described by Dr. Schwyzer.

I was happy to find that my experience coincides with that of Dr. Schwyzer as it relates to the factor of shock in perforation. In the perforations of gastric and duodenal ulcers which have occurred in the hospital or in other patients coming early for closure of a perforation, I have never seen so-called surgical shock with quickening of the pulse rate and depression of the arterial pressure. Invariably, such patients are found to be severely prostrated because of the agonizing distress, but shock in the true sense, in my experience, at any rate, does not occur. It is interesting that despite a studied effort, extending back over eight or nine years, to teach our junior and senior medical students that the complication of shock does not attend perforation, more frequently than not in their examinations they indicate that shock does occur. For a period of about three years during which we have given oral examinations to the seniors, I have suggested to those giving such a reply that they write me when they see surgical shock accompanying perforation of an ulcer. To date, no description of such an occurrence has been received.

These answers of the students do not originate de novo. The explanation is to be found in the antiquated information to be found in many of our best surgical textbooks. When the authors of texts will write of what they know and have themselves observed and cease to repeat the ancient errors copied from older texts, this and other similar errors will no longer be perpetuated.

The problem of what is best to do with some of these late perforations can undoubtedly be better settled by trial of different methods than by discussion. In the late cases of more than 24 hours' duration, the results on the whole are so bad by any form of management that a selection of cases for varied types of treatment would appear to be fully justified. The uniform experience in the closure of late perforations into the free peritoneal cavity has been that the risk is formidable. When the majority of writers relate that the mortality for perforations of more than 24 hours in their experience has been between 50% and 70%, and a few other writers are able to report small series of almost uniform recovery, it is immediately apparent that they are dealing with different types of cases. The latter are undoubtedly the so-called "formes frustes" of Vaughn and Singer.

There can be no debate about the early case. Closure of the perforation should be done immediately. Those patients presenting the clinical picture of perforation in which no gas can be demonstrated below the diaphragm on the roentgenogram exposed with the patient in the erect posture, in my experience can be safely treated without operation. The "formes frustes" patient coming after 24 hours, relating a story of perforation but exhibiting minimal findings, and revealing only minimal amounts of gas below the diaphragm, may also be treated safely with conservatism. The patients who come late and exhibit diffuse findings but manifest some signs of localization as indicated by (1) the presence of a relatively small amount of gas below the diaphragm, (2) the presence of a dense shadow in the upper right abdomen—it is my impression that the interests of these patients is better served by conservative treatment, of which suction applied to an inlying duodenal tube is the most important item. Cases who come late, in which there is no evidence of localization and in which escape is probably still occurring from the perforation as manifested by a large amount of gas under the diaphragm—such patients, if their general condition warrants, must be subjected to operation despite the risk. When the physical status of such patients is poor, no good can come from operating upon them.

Dealing with perforations in the gastrointestinal canal is essentially a problem in bacteriology. The relatively anaerobic character of perforations due to ulcer in the stomach or duodenum makes this potential tragedy considerably less dangerous than perforations of a similar size lower in the intestinal canal. It is to the development of bacteriological aids that we must look for help in our anxiety to manage more successfully late perforations due to ulcer.

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Megakaryocytoma

Dr. Martin Nordland (Minneapolis) reported a case of Megakaryocytoma in a woman 56 years of age, with operation and recovery.

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The meeting adjourned.

R. T. LaVake, M.D.,
Secretary.

PROCEEDINGS OF THE MINNEAPOLIS CLINICAL CLUB

REGULAR MEETING, APRIL 11, 1935

President Erling W. Hansen in the Chair

Case Report—Hyperadrenalism

Dr. S. R. Maxeiner: This is a preliminary report of a case which I thought very interesting in view of the recent advances in surgery of the adrenal glands.

The patient is a male, 39 years of age. In 1933, he complained primarily of pressure over his heart and attacks in which he thought his heart would stop. The pain was referred to his left shoulder. He states that

the symptoms referred to his heart really began before his discharge from the army. He further states that in 1926 he was refused life insurance because of his heart and increased blood pressure. At this time, he also complained of fatigue.

In January, 1933, his pulse rate was 125 and blood pressure 210/140. His electrocardiogram showed tachycardia and depression of the S-T phase in D???? and D???? leads (quotations of Ziskin). At that time his urine was negative, Wassermann was negative and basal metabolic rate, plus 29. Under intensive treatment *of* Lugol's, he showed moderate improvement which led to the diagnosis of hyperthyroidism. A subtotal thyroidectomy was performed and the gland removed weighed 31 grams. Microscopically, the pathologist reports a probable hyperplastic goiter which had been intensively treated with Lugol's.

In March, 1934, the patient again presented himself for examination. He states that he has not been improved by his thyroidectomy, and that he is still having attacks of pain at which time the heart feels as though it would stop. He states the attacks of pain are so severe that he can only control them by assuming a perfectly calm and relaxed attitude and that these attacks may last for one-half hour to one-half day. He also suffers with severe headaches, which are difficult of relief.

X-ray showed relative heart size of 43 per cent. At that time, Dr. H. V. Hanson stated there were very definite changes in the eye findings, the fundus showing evidence of hypertension. He recommended that his findings were not typical of regular hypertension and suggested the possibility of an atypical condition, possibly related to his suprarenals. His pulse was 102 to 120, and blood pressure, 220/150. A complete physical examination revealed the following: An absence of evidence of cranial arteriosclerosis; heart is good; kidneys are good; blood pressure, 220/150 to 260/160. Blood chemistry is within normal limits. Metabolism is plus 78 to plus 125, some of his readings being so high that they could not be accurately estimated.

The patient was thoroughly studied by Doctors Ziskin, Sedgley and McGuire, who suggested the possibility of hyperinsulinism rather than hyperthyroidism. On March 22nd he was seen by Dr. Nathanson in consultation who agreed that the patient was suffering from hyperadrenalism, possibly due to tumor of the adrenal cortex.

On April 5, 1935, through a kidney incision under spinal anaesthesia (blood pressure, 264/150), we exposed the suprarenal fat and pushed the kidney downward. Approaching carefully beneath the diaphragm the left suprarenal gland was exposed. The surrounding fat and tissue were stripped from the gland and two or three small vessels ligated. The gland was exposed and completely freed to the hilus, and by the use of long pedicle clamps, four-fifths of the left suprarenal gland was resected. The remaining one-fifth was transfixed and tied for control of hemorrhage. The wound was closed without drainage and the patient left the table in good condition.

The patient's blood pressure has been taken at close intervals and runs as follows:

April 5, 1935: Blood pressure, 160/140, 190/140, 150/115, 140/90, 120/90. April 6, 1935: 100/76 (6:00 a. m.), 95/80, pulse 120, 112/88, 114/90, 122/88, 112/88, 138/104, pulse 100. April 7, 1935: 140/100, 148/110, 135/100. April 8, 1935: 140/100, 170/110, 160/110. April 9, 1935: 170/110, 180/110, 190/120. April 12, 1935: Blood pressure, 170/120. April 22, 1935: Basal metabolic rate, plus 2.3. April 24, 1935: Blood pressure, 170/140; pulse 80 to 100. May 3, 1935: Basal metabolic rate, plus 10.

His attacks have been entrely relieved and generally he feels much improved.

Pathological Report rendered by Dr. Nolan: About five-sixths of resected suprarenal gland, left. On gross appearance, the specimen consists of a resected piece of adrenal gland which weighs seven grams. On section, a fairly sharply demarcated, bright yellowish nodule is noted which measures eight millimeters in diameter. The nodule is imbedded in the substance of the gland immediately beneath the cortex.

Microscopic Examination: Section reveals adrenal cortex and medulla of a normal appearance aside from the nodule which is fairly well marked off from the surrounding adrenal tissue. This nodule is made up of large, rounded and oval cortical type adrenal cells which have deep staining rounded vesicular nuclei. No mitotic figure or other malignant changes are noted.

Diagnosis: Adenoma, cortical type, benign, of left adrenal gland.

Conclusions

Points of special interest from a diagnostic point were the excellent condition of the patient, essential hypertension of marked degree and a very high metabolic rate. From the standpoint of treatment one is impressed with the immediate fall of blood pressure of approximately 100 millimeters of mercury, systolic, and the immediate return of the basal metabolic rate to normal.

Discussion

Dr. E. S. Platou: I should like to know whether these adenomata have any significance in the clinical picture. Are they usually bilateral? If not, how do you know which side to approach and just what was the finding in the eye grounds which suggested that the difficulty arose in the adrenals?

Dr. M. H. Nathanson: As to the adenomata, they are of questionable significance as they have been found unassociated with hypertension. In most cases of hypertension the adrenals are normal. There are reports in which diffuse hyperplasia of the medulla on both sides have been described with the presence of nodules. It is not stated whether these nodules are bilateral.

There is definitely a condition which resembles the ordinary essential hypertension but shows some differences and also resembles hyperthyroidism, but has features which are not present in the usual hyperthyroidism. It is suggested that hyperactivity of the

adrenals is the basis for this condition. I saw a patient of this type about four years ago. She was a middle-aged woman whose chief complaint was exhaustion and she showed a constant tachycardia and a remarkably high basal metabolic rate varying from plus 40 to plus 75. At that time the blood pressure was normal. Within a year she developed a hypertension, high systolic and high diastolic pressures. The high BMR's and tachycardia suggested hyperthyroidism, but there was no exophthalmia, no tremor and no response to Lugol's solution. I suggested that the pathology was in the adrenal glands. This patient finally went to Dr. Crile, who did a denervation of the left adrenal gland. This was done in December, 1934. Up to the present time there has been only a slight improvement. Dr. Crile now advises operation on the other side.

The patient Dr. Maxeiner has reported presented the same features, tachycardia, high BMR's, and a hypertension above that found in hyperthyroidism. A thyroidectomy had been performed two years ago without benefit. At the present time he was getting no response from Lugol's soluton. This is a condition which undoubtedly represents a state of hypersuprarenalism and should respond favorably to subtotal adrenalectomy. The particular feature which differentiates this condition from ordinary essential hypertension is the high BMR's. In essential hypertension this is usually within normal limits. Most of the experimental work does not support the theory that essential hypertension is due to an excess of adrenalin. It is very doubtful, therefore, whether adrenalectomy is indicated in the usual hypertension. It would seem that section of the anterior spinal nerve roots in order to lower the vascular tonus of the splanchnic and peripheral arteries would be a more logical procedure.

As regards the retinal vessels, the changes were characteristic of hypertension in contrast to those observed in glomerulonephritis.

Dr. A. A. Zierold: I should like to offer my congratulations to Dr. Maxeiner. This case impresses me as being really major surgery, and I believe that he is to be congratulated not only for his courage in attempting such an operation but for completing it so successfully. It is interesting to note the attack on the adrenal gland and its similarity to the attack upon the thyroid gland. Perhaps the most illogical operation that we perform in surgery is that for hyperthyroidism, but as it is an eminently successful procedure it seems not unreasonable that in certain adrenal states we may arrive at the same end.

There have been devised in recent years several methods of surgical treatment for what we loosely term "hypertension," but there is no general accord as to the one satisfactory and best procedure. DeCourcy has practiced partial resection of the adrenal gland with apparent success. Crile has denervated the gland and also reports satisfactory results. Indirect methods of approach such as section of the anterior spinal roots as performed by Adson and Craig, and splanchic section as done by Peet also appear to be effective. The fact that these procedures are none of them uniformly satisfactory would suggest the possibility of some variation in the condition which is under treatment. As Dr. Nathanson suggests, it is probable that there is a definite adrenal syndrome which may be distinguished from other types of hypertension and which, too, may be more susceptible to direct attacks upon the adrenal gland than by indirect procedure such as nerve section. It seems to me quite probable that progress in this field will be arrived at not by further multiplication of operative procedure, but by more careful and accurate differentiation of the form of the disease under treatment.

URETERAL OBSTRUCTION FOLLOWING IRRADIATION OF THE FEMALE PELVIC ORGANS

Dr. E. W. Exley

Summary

The author reviews the literature and cites two cases of ureteral obstruction and one case of bladder injury following radium treatment of the uterus. Paper to be published elsewhere in this journal.

Discussion

Dr. Leo Rigler: I would like to ask a few questions. It has occurred to me that transplantation of the ureters might have been possible as a life-saving process in such a case. I would like to know whether this is feasible. Possibly drainage of the pelvis of the kidney might also help.

This is a very much-discussed subject. The problem arises as to whether or not the strictures of the ureters are really due to the irradiation or rather to the metastasis which is often present in these cases and which can produce much the same findings. The same problem has been enunciated in other parts of the body, particularly in cases of carcinoma of the breast where lung fibrosis has occurred as the result of radiation. Many of the so-called cases of fibrosis of the lung have actually been fibrotic metastasis to the lung. I might say, too, that postmortem examination does not exclude carcinoma because we know that a type of carcinoma will appear, which, after irradiation, may be very difficult to identify microscopically.

I was impressed with the fact that the irradiation in these cases was not excessive, only 2,400 mgm. hours being used, which is not a large dosage in carcinoma of the uterus. It is rather difficult for me to imagine that this would be sufficient to produce the effects described, although certainly they seem to have occurred. This was a most interesting presentation.

Dr. H. M. N. Wynne: Uraemia is the most common cause of death in untreated cases of carcinoma of the cervix. The bases of the broad ligaments become infiltrated, the lower ureters are surrounded and compressed, if not invaded, by the malignant growth. Hydroureter, hydronephrosis and infection of the

upper urinary tract result. This sequence of events occurs not only with carcinoma of the cervix but also in some cases of adenomyoma of the rectovaginal septum. I have seen the ureters completely surrounded and greatly constricted by adenomyomatous tissue.

In the presence of infection of the urinary tract and of symptoms suggesting a lesion of the bladder, ureters or kidneys, cystoscopic examination is indicated before treatment is instituted. It would be well to utilize intravenous urography in all cases even in the absence of urinary tract symptoms.

These two cases of ureter stricture reported by Dr. Exley occurred following radiation for carcinoma of the uterine body. Carcinoma of the corpus invades the bases of the broad ligaments much less frequently and later in the disease than does carcinoma of the cervix. In these two cases there is no information available to determine the extent of the malignant growths or to show whether there was any lesion of the upper urinary tract before radiation therapy was undertaken. However, the symptoms caused by the structures apparently began some time after irradiation and we may assume have been caused by this treatment.

The technique of radium application and of deep X-ray therapy is of the greatest importance both in accomplishing the desired effects and also in avoiding serious complications. Strictures of the bowel, ureters and urethra have been reported by various observers following the treatment of malignant tumors with radium and X-rays. These effects may occur many months or several years after the treatment. Palmer Findlay says: "The introduction of radium therapy has added measurably to urinary lesions, due to the spread of infection and the late formation of connective tissue in the parametrium, causing constriction and even complete obstruction of the ureters."

I have never had the opportunity of observing ureter stricture following radium therapy. Whether such strictures are uncommon or are usually not recognized, I am unable to say. I have treated a woman for stricture of the urethra following radium applications for carcinoma of the cervix. This stricture was resistant to dilatation and gradually contracted after treatment had been discontinued for several months.

Dr. H. W. Christianson: I was particularly interested in Dr. Exley's paper because we see quite a number of cases of factitial proctitis occurring in the rectum after irradiation of structures adjacent to this organ. Occasionally an ulcer is present and in close proximity to the ulcer one will find the one characteristic of factitial proctitis, namely, telangiectasis or the laying down of new blood vessels and the enlargement or engorgement of the old vessels. These ulcers are variable in size; if large, they may produce some narrowing of the lumen of the bowel after healing has taken place. I have not seen a complete stricture of the rectum from this cause.

Dr. C. J. Ehrenberg: I would like to ask if there is any record of the bladder technique used at the time of the irradiation in these two cases and to ask the same question in regard to the reported cases of the other men. Also, whether or not any X-ray irradiation followed, subsequent to the radium irradiation.

Dr. E. W. Exley: What Dr. Rigler has said regarding the fallacies of the microscopic diagnosis of malignant tissue after irradiation s well known. This tissue was thoroughly studied and from all information we were able to obtain from the pathologists, no malignant tissue could be found. Transplantation of the ureters into the bowel is to be considered in this condition provided that the patient is a proper subject and provided that the condition is not too rapidly progressive.

Dr. Wynne mentioned that the second patient, the one who is still living, may have been a case of primary hydro-ureter. I assume that this is probably true. However, we do know that she had an ulcerating bladder lesion, a reaction following irradiation and it may have been that there was primarily no stricture of this ureter. After all, "the only scientific conclusion that one can arrive at upon being unable to catheterize a ureter is that you cannot catheterize the ureter."

Dr. Christianson's discussion is interesting. I recall one case of carcinoma of the prostate that developed a severe proctitis after irradiation with radium element.

In regard to Dr. Ehrenberg's question, the eight cases Bugbee reported were all treated by irradiation at the Women's Hospital, in New York. I am not familiar with their technique nor dosage. In the cases reported by Drexler and Howes, autopsies on 27 consecutive deaths from carcinoma of the uterus and the cervix, it was found that 22 of the patients had died from urinary infection and uremia.

ULCERATIVE CONDITIONS OF THE LARGE BOWEL FROM A PROCTOSCOPIC STANDPOINT

Inaugural Thesis—Minneapolis Clinical Club

Harry W. Christianson, M.D.

The ulcerative lesions of the large bowel have been classified under two headings, namely, those of a specific and those of a non-specific origin. The ulcers caused by a definitely known organism include chronic ulcerative colitis, amebic dysentery, bacillary dysenter, tuberculosis, Asiatic cholera, syphilis, actinomycosis and colitis caused by the Balantidium coli.

According to Boudry and Bargen, there are five different causes of non-specific ulcerations of the colon, namely, (1) those resulting from an obscure metallic poisoning, such as that caused by mercuric chloride and other mercury preparations; (2) those which follow stasis of the colonic stream, which may result from benign, malignant or inflammatory lesions within the lumen of the colon or lesions which produce stasis by external pressure; (3) those which accompany uremia; (4) those which are found in the

presence of overwhelming septic states, and (5) those which seem to develop from a pseudomembranous type of colitis.

I would like to add, to the above list, the following ulcers: (1) Those caused by irradiation of the structures adjacent to the rectum and which have been termed "factitial ulcers"; (2) traumatic lesions self-inflicted by hysterical patients, and (3) carcinomatous ulcers.

In this paper only the ulcerative lesions which may be seen at proctoscopy will be discussed, consequently some of the above conditions will be omitted.

Chronic Ulcerative Colitis

Chronic ulcerative colitis is a systemic disease in which the outstanding symptoms have been summarized as follows: Variable degrees of uncontrollable dysentery or discharges of muco-purulent bloody material; characteristic appearance of the patient; various grades of anemia and depleting chronic invalidism occurring in the most active periods of a patient's life.

The appearance of the mucosa of the colon is characterized by myriads of pin-point ulcers and in rare instances, they are found in the small bowel. Dr. Bargen has been able to isolate a diplostreptococcus as the etiological factor in about 80 per cent of his cases.

The primary lesions producing the ulceration are found in the wall of the bowel and not in the mucosa. The terminal vessels become plugged by thrombi and as a result the mucosa supplied by these vessels becomes necrotic and tiny ulcers form. The ulcerations most frequently start low in the rectum and gradually proceed upward toward the right colon. However, in some instances the disease does not spread but remains confined within the rectum over a long period of time.

In a small percentage of the cases, chronic ulcerative colitis involves only a small portion of the proximal part of the large bowel, and in such cases the diagnosis can be made only upon roentgenographic examination or upon operative findings. This limited involvement is spoken of as a regional chronic ulcerative colitis.

In chronic ulcerative colitis the sigmoidoscopic examination reveals the mucosa to be studded with myriads of characteristic pin-point ulcers which impart a velvety or a granular appearance to its surface. There are no normal areas of mucosa between the ulcers. The mucosa is so easily traumatized that merely touching it with a cotton swab suffices to produce bleeding. The limit of the inflammatory process is not sharply defined; rather, it is characterized by a gradual fading from abnormal to healthy tissue.

"In subsequent attacks, many varied and bizarre changes develop in the wall of the bowel. This is due to and modified by the severity and the number of previous attacks, and the amount of deformity which has been produced in the walls of the bowel. The hyperemia, edema, miliary abscesses, and miliary ulcers will be seen in regular order in those parts of the mucous membrane which are not deformed and scarred, but this progression of events will not be present in those areas in which the mucous membrane has been destroyed and replaced by scar tissue. In place of these characteristic features, in the fibrous areas will be found miliary, pock-like scars which are of equal significance with any of the features mentioned. In severe cases, in which no mucous membrane is left unattacked, these scars are of greatest importance, because they represent the chief gross evidence of chronic ulcerative colitis. They are the footprints of the original attack."

Occasionally larger ulcers, irregular in outline and variable in depth, are seen, but these are usually due to a secondary infection; another organism invading the original ulcers, or, possibly, they may be produced by the specific organism causing the chronic ulcerative colitis. These larger ulcers are not characteristic of the disease and are not seen frequently.

The valves of Houston shrink and disappear relatively early in this disease and as it progresses the lumen of the bowel contracts and eventually the bowel may become so small that it is impossible to pass even the smallest sigmoidoscope. In these advanced cases the sigmoidoscopic picture is that of a tube of uniform, small diameter lined with an ulcerated, bleeding mucosa; all of the anatomical characteristics of the rectum having been obliterated by the pathological process. Polyps are not infrequently seen upon the examination of such a bowel.

The varying appearance of the bowel in chronic ulcerative colitis, as observed at proctoscopy, may cause one, who is not entirely familiar with disease, to hesitate in making a diagnosis. These changes in the bowel mucosa are peculiar to this disease, which is characteristic by cycles of exacerbation and remission, but with the opportunity to examine a number of such bowels one should be able to recognize the disease.

(Continued in July 15 issue)

NEWS ITEMS

Dr. and Mrs. Herbert Boysen, Welcome, Minn., are touring California for a month's vacation.

Dr. Leo H. McMahon, Breckenridge, was recently married to Miss Alice Hartley of Staples, Minn.

Dr. Irvin Kerlan, a graduate of the University of Minnesota, has opened offices for general practice at McGregor, Minn.

Dr R. R. Moses, a recent graduate of the University of Minnesota, has opened offices for general practice at Kenyon, Minn.

Dr. R. A. Trombley, Emmons, Minn., will spend a year in post-graduate work at the University of Chicago Medical School.

Dr. Edwin J. Simons, Swanville, has moved to Ah-Gwah-Ching, Minn., and is now on the staff at the Minnesota State Sanatorium.

Dr. K. E. Bergquist, Duluth, has moved to Battle Lake, Minn., and is now associated with Dr. C. A. Boline in general practice.

Truman, Minn., is to have a new modern hospital with all of the modern conveniences, with Mrs. Dorothy Gerard as superintendent.

Dr. A. S. Needles, Grafton, N. D., has moved to Utah, and will be connected with a staff of medical men on one of the state's largest mines.

Dr. F. W. Van Valkenburg, after a year's absence in special hospital work in Eastern cities, has returned to Long Prairie, Minn., and resumed his medical practice.

Dr. David M. Marclay, who was recently married to Miss Lillian Miles, has returned from his wedding trip and the doctor is now on the Mayo Clinic staff at Rochester.

Dr. B. H. Haynes, who was in active practice for many years at St. James, Minn., has decided to locate at Mapleton, Minn., after a long illness, but with health now fully restored.

Dr. Vernon L. Hart has been named chairman of the Minneapolis division of the Minnesota Association for Crippled Children, and is planning to secure some $50,000 for this worthy cause.

The Southern Minnesota Medical Society will hold its annual meeting at Austin on August 25 and 26. A special committee has been named to prepare the program and arrange details for the meeting.

A directed verdict in favor of Drs. Paul and Will Gamble of Albert Lea, Minn., was ordered by Judge A. B. Gislason of New Ulm in an action brought against them in district court in charging malpractice.

At the graduation exercises for 1,400 University of Minnesota seniors, Dr. William J. Mayo and Dr. Charles H. Mayo were given honorary degrees of doctors of laws and E. L. Carpenter of doctor of music.

Dr. Martin Nordland, president of the Minneapolis Surgical Society, recently gave a talk on "The Role of Surgery in Disturbances of the Thyroid Gland" at the eighty-fifth meeting of the Illinois State Medical Association at Rockford, Ill.

Dr. E. A. Meyerding, head of the Minnesota State Christmas Seal Committee, has issued a warning not to give any funds to would-be solicitors, unless they can show proper credentials, as many "fake" solicitors have been reported from different sections of the state.

Five Minnesota students received degrees at the fifty-ninth commencement of Johns Hopkins University. They are William Jackson Johnstone of St. Paul, bachelor of arts degree; Herman E. Hillsboe, St. Paul, certificate in public health; Floyd M. Feldman, Pipestone, Minn., doctor of public health, and Clarence Dennis and Charles L. Somers, Jr., of St. Paul, doctor of medicine degrees.

The short course in Refraction that was held at the University of Minnesota through the Department of Ophthalmology last April proved so very successful that it will be repeated again, starting on July 1, and continue for four weeks. The course will be limited to ten people, and will require each man's full time. The fee will be $80.00, $50.00 to be deposited with application, and $30.00 on registration. The details of this course were published in full in THE JOURNAL-LANCET issue of March 1.

Dr. A. F. Branton of Willmar was named president-elect of the Minnesota Hospital Association at the annual convention at Duluth last month. He will take office in 1936. Victor Anderson of Minneapolis took office as president at the closing program at Lutsen, succeeding J. H. Mitchell of Rochester. Sister Patricia, O. S. B., of Duluth, first vice-president; Dr. H. A. Burns of Ah-Gwah-Ching, Minn., second vice-president; Ray Amberg of Minneapolis, treasurer, and A. M. Calvin, executive secretary.

Dr. Herman M. Johnson, 61, father of the state's basic science law, died June 19 at his home in Dawson, Minn. A graduate of the University of Minnesota medical school, Dr. Johnson settled in Dawson in 1903 and since had been in active practice there with his brother, Dr. Carl Johnson. He built the Dawson surgical hospital and was its chief surgeon. Dr. Johnson was best known for his long campaign to enact laws to protect the public against medical frauds. He began the fight in 1926 as president of the Minnesota State Medical Association. And in 1927 his efforts were successful when the legislature enacted his basic science law, since regarded as a model for legislation of its sort. At the time of his death Dr. Johnson was chairman of the Minnesota Medical Association's public policy and legislative committee and a delegate from the state association to the American Medical Association.

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Fifty-fourth Annual Session—1935
PIERRE, S. D.

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SOUTH DAKOTA STATE MEDICAL ASSOCIATION IN FIFTY-FOUTH ANNUAL SESSION

Pierre, South Dakota

FIRST SESSION OF HOUSE OF DELEGATES

Monday, May 13, 1935

St. Charles Hotel—7:00 P. M.

Meeting called to order by Dr. W. G. Magee, president.

Roll Call by the secretary with the following members present: Drs. W. G. Magee, A. S. Rider, J. L. Stewart, E. A. Pittenger, M. J. Hammond, C. E. Sherwood, B. M. Hart, J. C. Shirley, B. A. Bobb, N. J. Nessa, S. M. Hohf, R. B. Fleeger, H. R. Kenaston, N. K. Hopkins, E. W. Jones and J. F. D. Cook, secretary. Delegates as follows: Aberdeen Dist., W. A. Bates, J. O. F. Kraushaar; Watertown Dist., A. E. Johnson; Madison Dist., D. S. Baughman; Pierre Dist., H. B. Martin; Huron Dist., C. Feige; Mitchell Dist., E. M. Young, E. W. Jones; Sioux Falls Dist., W. E. Donahoe, G. A. Stevens;; Yankton Dist., J. C. Ohlmacher, W. F. Bushnell; Black Hills Dist., F. S. Howe; Rosebud Dist., E. C. Smith; Kingsbury Co. Dist., B. A. Dyar; Whetstone Valley Dist., D. A. Gregory.

Secretary Cook presented the minutes of the 1934 Session as published in the July 15, 1934 issue of THE JOURNAL-LANCET, and moved that the minutes be approved as published in THE JOURNAL-LANCET. C. E. Sherwood supported the motion. Carried.

Dr. W. G. Magee appointed the following reference committees:

Committee on Resolutions: Drs. D. S. Baughman, B. A. Dyar and E. W. Jones.

Committee on Amendments to Constitution and By-Laws: Drs. J. C. Ohlmacher, R. B. Fleeger and N. K. Hopkins.

Committee on Nominations and Place of Meeting: Drs. W. A. Bates, chairman; M. J. Hammond, D. S. Baughman, B. M. Hart, J. C. Shirley,, E. M. Young, N. J. Nessa, S. M. Hohf, R. B. Fleeger, E. C. Smith, P. R. Rozendal and D. A. Gregory.

Committee on Reports of Officers and Audits: Drs. A. E. Johnson, H. B. Martin and C. E. Sherwood.

The following communication was received:

Huron, S. D., May 13, 1935

Dr. J. F. D. Cook, Sec'y.,
State Medical Association,
St. Charles Hotel, Pierre, S. D.

"Be it resolved that the South Dakota Dental Society express its desire to co-operate in an allied council of interrelated medical groups for the advancement of the social, political and professional matters of our common interests. We desire to hold our 1936 meeting at the same time and place of your Association. We have selected Sioux Falls."

ERNEST ELMEN, Secretary
South Dakota Dental Society.

Report of Secretary-Treasurer

Official communication with the American Medical Association and official state medical associations officers and councilors has required considerable time and attention by this office.

The attendance of the State Secretaries Conference at headquarters of A. M. A. Chicago, a two day session. The conference includes state officers of medical associations and editors of official medical journals. The many problems discussed are very enlightening and are helpful in presentation of matters of national and state association administration.

The Regional Conference at St Paul was attended in February by Drs. W. G. Magee, J. R. Westaby, E. A. Pittenger, A. S. Rider, J. O. F. Kraushaar, W. F. Bushnell, J. F. D. Cook and others, South Dakota being well represented.

The 1935 Session of our Legislature was well cared for by our Medical Committee at Pierre, advisory to our legal representative Hon. Karl Goldsmith. At this Session laws were passed that directly concern the medical profession. I call your attention to three of such laws. Viz: S. B. No. 168—Relating to intoxicating liquor, and S. B. No. 36—Gross Income. Consult your Session Laws for full details. Also H. B. No. 213—Uniform Narcotic Drug Act. This law should be carefully studied. This law is published herewith.

(H. B. 213)

ADOPTING THE UNIFORM NARCOTIC DRUG ACT

AN ACT Entitled, An Act Defining and Relating to Narcotic Drugs and to Make Uniform the Law with Reference Thereto.

Be It Enacted by the Legislature of the State of South Dakota:

Section 1—Definitions—The following words and phrases, as used in this Act, shall have the following meaning, unless the context otherwise requires:

(1) "Person" includes any corporation, association, co-partnership, or one or more individuals.

(2) "Physician" means a person authorized by law to practice medicine in this State and any other person authorized by law to treat sick and injured human beings in this State and to use narcotic drugs in connection with such treatment.

(3) "Dentist" means a person authorized by law to practice dentistry in this State.

(4) "Veterinarian" means a person authorized by law to practice veterinary medicine in this State.

(5) "Manufacturer" means a person who by compounding, mixing, cultivating, growing, or other process, produces or prepares narcotic drugs, but does not include an apothecary who compounds narcotic drugs to be sold or dispensed on prescriptions.

(6) "Wholesaler" means a person who supplies narcotic drugs that he himself has not produced nor prepared, on official written orders, but not on prescriptions.

(7) "Apothecary" means a licensed pharmacist as defined by the laws of this State and, where the context so requires, the owner of a store or other place of business where narcotic drugs are compounded or dispensed by a licensed pharmacist; but nothing in this Act shall be construed as conferring on a person who is not registered nor licensed as a pharmacist and authority, right, or privilege, that is not granted to him by the pharmacy laws of this State.

(8) "Hospital" means an institution for the care and treatment of the sick and injured, approved by the State Board of Health; as proper to be entrusted with the custody of narcotic drugs and the professional use of narcotic drugs under the direction of a physician, dentist, or veterinarian.

(9) "Laboratory" means a laboratory approved by the State Board of Health; as proper to be entrusted with the custody of narcotic drugs and the use of narcotic drugs for scientific and medical purposes and for purposes of instruction.

(10) "Sale" includes barter, exchange, or gift, or offer therefor, and each such transaction made by any person, whether as principal, proprietor, agent, servant, or employee.

(11) "Coca leaves" includes cocaine and any compound, manufacture, salt, derivative, mixture, or preparation or coca leaves, except substances from which cocaine or ecgonine maybe synthesized or made.

(12) "Opium" includes morphine, codeine and heroin, and any compound, manufacture, salt, derivative, mixture or preparation of opium, but does not include apomorphine or any of its salts.

(13) "Cannabis" includes the following substances under whatever names they may be designated: (a) The dried flowering or fruiting tops of the pistillate plant Cannabis Sativa L., from which the resin has not been extracted; (b) the resin extracted from such tops, and (c) every compound, manufacture, salt, derivative, mixture or preparation of such resin, or of such tops from which the resin has not been extracted.

(14) "Narcotic Drugs" means coca leaves, opium, cannabis, and every substance neither chemically nor physically distinguishable from them.

(15) "Federal Narcotic Laws" means the laws of the United States relating to opium, coca leaves, and other narcotic drugs.

(16) "Official written order" means an order written on a form provided for that purpose by the United States Commissioner of Narcotics, under any laws of the United States making provision therefor, if such order forms are authorized and required by federal law, and if no such order form is provided, then on an official form provided for that purpose by the State Board of Health.

(17) "Dispense" includes distribute, leave with, give away, dispose of, or deliver.

(18) "Registry number" means the number assigned to each person registered under the Federal Narcotic Laws.

Section 2—Acts Prohibited—It shall be unlawful for any person to manufacture, possess, have under his control, sell, prescribe, administer, dispense, or compound any narcotic drug, except as authorized in this Act.

Section 3—Manufacturers and Wholesalers—No person shall manufacture, compound, mix, cultivate,

grow, or by any other process produce or prepare narcotic drugs, and no person as a wholesaler shall supply the same, without having first obtained a license so to do from the state treasurer of the state of South Dakota.

Section 4—Qualifications for Licenses—No license shall be issued under the foregoing section unless and until the applicant therefor has furnished proof satisfactory to the State Board of Health.

(a) That the applicant is of good moral character or, if the applicant be an association or corporation, that the managing officers are of good moral character.

(b) That the applicant is equipped as to land, buildings, and paraphernalia properly to carry on the business described in his application.

No license shall be granted to any person who has within five years been convicted of a willful violation of any law of the United States, or of any state, relating to opium, coca leaves, or other narcotic drugs, or to any person who is a narcotic drug addict.

The state treasurer may suspend or revoke any license for cause, when he is requested so to do by the State Board of Health.

Section 5—Sale on Written Orders.

(1) A duly licensed manufacturer or wholesaler may sell and dispense narcotic drugs to any of the following persons, but only on official written orders:

(a) To a manufacturer, wholesaler, or apothecary.

(b) To a physician, dentist or veterinarian.

(c) To a person in charge of a hospital, but only for use in that laboratory for scientific and medical purposes.

(2) A duly licensed manufacturer or wholesaler may sell narcotic drugs to any of the following persons:

(a) On a special written order accompanied by a certificate of exemption, as required by the Federal Narcotic Laws, to a person in the employ of the United States Government or of any state, territorial, district, county, municipal, or insular government, purchasing, receiving, possessing or dispensing narcotic drugs by reason of his official duties.

(b) To a master of a ship or person in charge of any aircraft upon which no physician is regularly employed, for the actual medical needs of persons on board such ship or aircraft only in pursuance of a special order form approved by a commissioned medical officer or acting assistant surgeon of the United States Public Health Service.

(c) To a person in a foreign country if the provisions of the Federal Narcotic Laws are complied with.

(3) Use of Official Written Orders—An official written order for any narcotic drug shall be signed in duplicate by the person giving said order or by his duly authorized agent. The original shall be presented to the person who sells or dispenses the narcotic drug or drugs named therein. In event of the acceptance of such order by said person, each party to the transaction shall preserve his copy of such order for a period of two years in such a way as to be readily accessible for inspection by any public officer or employee engaged in the enforcement of this Act. It shall be deemed a compliance with this sub-section if the parties to the transaction have complied with the Federal Narcotic Laws, respecting the requirements governing the use of order forms.

(4) Possession Lawful—Possession of or control of narcotic drugs obtained as authorized by this section shall be lawful if in the regular course of business, occupation, profession, employment, or duty of the possessor.

(5) A person in charge of a hospital or of a laboratory, or in the employ of this state or of any other state, or of any political subdivision thereof, and a master or other proper officer of a ship or aircraft, who obtains narcotic drugs under the provisions of this section or otherwise, shall not administer, nor dispense, nor otherwise use such drugs, within this state, except within the scope of his employment or official duty, and then only for scientific or medicinal purposes and subject to the provisions of this Act.

Section 6—Sales by Apothecaries.

(1) An apothecary, in good faith, may sell and dispense narcotic drugs to any person upon a written prescription of a physician, dentist, or veterinarian, dated and signed by the person prescribing on the day when issued and bearing the full name and address of the patient for whom, or of the owner of the animal for which, the drug is dispensed, and the full name, address and registry number under the Federal Narcotic Laws of the person prescribing, if he is required by those laws to be so registered. If the prescription be for an animal, it shall state the species of animal for which the drug is prescribed. The person filling the prescription shall write the date of filling and his own signature on the face of the prescription. The prescription shall be retained on file by the proprietor of the pharmacy in which it is filled for a period of two years, so as to be readily accessible for inspection by any public officer or employee engaged in the enforcement of this Act. The prescription shall not be refilled.

(2) The legal owner of any stock of narcotic drugs in a pharmacy, upon discontinuance of dealing in said drugs, may sell said stock to a manufacturer, wholesaler, or apothecary, but only on an official written order.

(3) An apothecary, only upon official written order, may sell to a physician, dentist, or veterinarian, in quantities not exceeding one ounce at any one time, aqueous or oleaginous solutions of which the content of narcotic drugs does not exceed a proportion greater than twenty per cent of the complete solution, to be used for medical purposes.

Section 7—Professional Use of Narcotic Drugs.

(1) Physicians and Dentists—A physician or a dentist, in good faith and in the course of his professional practice only, may prescribe, administer, and dispense narcotic drugs, or he may cause the same to be administered by an assistant or orderly under his direction and supervision.

(2) Veterinarians—A veterinarian, in good faith and in the course of his professional practice only, and not for use by a human being, may prescribe, administer, and dispense narcotic drugs, and he may cause them to be administered by an assistant or orderly under his direction and supervision.

(3) Return of Unused Drugs—Any person who has obtained from a physician, dentist or veterinarian any narcotic drugs for administration to a patient, during the absence of such physician, dentist or veterinarian, shall return to such physician, dentist or veterinarian any unused portion of such drug, when it is no longer required by the patient.

Section 8—Preparations Exempted—Except as otherwise in this Act specifically provided, this Act shall not apply to the following cases:

(1) Prescribing, administering, dispensing, or selling at retail of any medicinal preparation that contains in one fluid ounce, or if a solid semi-sold preparation, in one avoirdupois ounce: (a) not more than two grains of opium; (b) not more than one-quarter of a grain of morphine or of any of its salts; (c) not more than one grain of codeine or of any of its salts; (d) not more than one-eighth of a grain of heroin or of any of its salts; (e) not more than one-half of a grain of extract of cannabis nor more than one-half of a grain of any more potent derivative or preparation of cannabis, and (f) not more than one of the drugs named above in clauses (a), (b), (c), (d) and (e).

(2) Prescribing, administering, dispensing, or selling at retail of liniments, ointments, and other preparations, that are susceptible of external use only and that contain narcotic drugs in such combinations as prevent their being readily extracted from such liniments, ointments, or preparations, except that this Act shall apply to all liniments, ointments, and other preparations, that contain coca leaves in any quantity or combination.

The exemptions authorized by this section shall be subject to the following conditions:

(a) No person shall prescribe, administer, dispense, or sell under the exemptions of this section, to any one person, or for the use of any one person or animal, any preparation or preparations, included within this Section, when he knows, or can with reasonable diligence ascertain, that such prescribing, administering, dispensing, or selling will provide the person to whom or for whose use, or the owner of the animal for the use of which, such preparation is prescribed, administered, dispensed, or sold, within any forty-eight consecutive hours, with more than four grains of opium, or more than one-half grain of morphine or any of its salts, or more than two grains of codeine or any of its salts, or more than one-quarter of a grain of heroin or of any of its salts, or more than one grain of extract of cannabis, or one grain of extract of cannabis, or will provide any more potent derivative or preparation of cannabis, or will provide such person or the owner of such animal, within 48 consecutive hours, with more than one preparation exempted by this Section from the operation of this Act.

(b) The medicinal preparation, or the liniment, ointment, or other preparation susceptible of external use only, prescribed, administered, dispensed, or sold, shall contain, in addition to the narcotic drug in it, some drug or drugs conferring upon it medicinal qualities other than those possessed by the narcotic drug alone. Such preparation shall be prescribed, administered, dispensed, and sold in good faith as a medicine, and not for the purpose of evading the provisions of this Act.

Nothing in this Section shall be construed to limit the kind and quantity of any narcotic drug that may be prescribed, administered, dispensed, or sold, to any person or for the use of any person or animal, when it is prescribed, administered, dispensed, or sold, in compliance with the general provisions of this Act.

Section 9—Record to Be Kept.

(1) Physicians, Dentists, Veterinarians and Other Authorized Persons—Every physician, dentist, veterinarian, or other person who is authorized to administer or professionally use narcotic drugs, shall keep a record of such drugs received by him, and a record of all such drugs administered, dispensed, or professionally used by him otherwise than by prescription. It shall, however, be deemed a sufficient compliance with other preparations of such drugs for local application, shall keep a record of the quantity, character and potency of such solutions or other preparations purchased or made up by him, and of the dates when purchased or made up, without keeping a record of the amount of such solution or other preparation applied by him to individual patients.

Provided: That no record need be kept of narcotic drugs administered, dispensed, or professionally used in the treatment of any one patient, when the amount administered, dispensed or professionally used for that purpose does not exceed in any forty-eight consecutive hours: (a) four grains of opium, or (b) one-half of a grain of morphine or of any of its salts, or (c) two grains of codeine or of any of its salts, or (e) one grain of extract of cannabis or one grain of any more potent derivative or preparation of cannabis or (f) a quantity of any other narcotic drug or any combination of narcotic drugs that does not exceed in pharmacologic potency any one of the drugs named above in the quantity stated.

(2) Manufacturers and Wholesalers — Manufacturers and wholesalers shall keep records of all narcotic drugs compounded, mixed, cultivated, grown, or by any other process produced or prepared, and of all narcotic drugs received and disposed of by them, in accordance with the provisions of Subsection 5 of this Section.

(3) Apothecaries—Apothecaries shall keep records of all narcotic drugs received and disposed of by them, in accordance with the provisions of Subsection 5 of this Section.

(4) Vendors of Exempted Preparations — Every

person who purchases for resale, or who sells narcotic drug preparations exempted by Section 8 of this Act, shall keep a record showing the quantities and kinds thereof received and sold, or disposed of otherwise, in accordance with the provisions of Subsection 5 of this Section.

(5) Form and Preservation of Records—The form of records shall be prescribed by the State Board of Health.

The record of narcotic drugs received shall in every case show the date of receipt, the name and address of the person from whom received, and the kind of quantity of drugs received; the kind and quantity of narcotic drugs produced or removed from the process of manufacture, and the date of such production or removal from process of manufacture, and the record shall in every case show the proportion of morphine, cocaine, or ecgonine contained in or producible from crude opium or coca leaves received or produced; and the proportion of resin contained in in or producible from the dried flowering or fruiting tops of the pistillate plant Cannabis Sativa L., from which the resin has not been extracted, received or produced. The record of all narcotic drugs sold, administered, dispensed, or otherwise disposed of, shall show the date of selling, administering, or dispensing, the name and address of the person to whom, or for whose use, or the owner and species of animal for which the drugs were sold, administered or dispensed, and the kind and quantity of drugs. Every such record shall be kept for a period of two years from the date of the transaction recorded. The keeping of a record required by or under the Federal Narcotic Laws, containing substantially the same information as is specified above, shall constitute compliance with this Section, except that every such record shall contain a detailed list of narcotic drugs lost, destroyed, or stolen, if any, the kind and quantity of such drugs, and the date of the discovery of such loss, destruction, or theft.

Section 10—Labels.

(1) Whenever a manufacturer sells or dispenses a narcotic drug, and whenever a wholesaler sells or dispenses a narcotic drug in a package prepared by him, he shall securely affix to each package in which that drug is contained a label showing in legible English the name and address of the vendor and the quantity, kind, and form of narcotic drug contained therein. No person, except an apothecary for the purpose of filling a prescription under this Act, shall alter, deface or remove any label so affixed.

(2) Whenever an apothecary sells or dispenses any narcotic drug on a prescription issued by a physician, dentist, or veterinarian, he shall affix to the container in which such drug is sold or dispensed, a label showing his own name, address, and registry number, or the name, address, and registry number of the apothecary for whom he is lawfully acting; the name and address of the patient or, if the patient is an animal, the name and address of the owner of the animal and the species of the animal; the name, address and registry number of the physician, dentist, or veterinarian, by whom the prescription was written, and such directions as may be stated on the prescription. No person shall alter, deface, or remove any label so affixed.

Section 11 — Authorized Possession of Narcotic Drugs by Individuals—A person to whom or for whose use any narcotic drug has been prescribed, sold, or dispensed, by a physician, dentist, apothecary, or other person authorized under the provisions of Section 5 of this Act, and the owner of any animal for which any such drug has been prescribed, sold, or dispensed, by a veterinarian, may lawfully possess it only in the container in which it was delivered to him by the person selling or dispensing the same.

Section 12—Persons and Corporations Exempted.

The provisions of this Act restricting the possessing and having control of narcotic drugs shall not apply to common carriers or to warehousemen, while engaged in lawfully transporting or storing such drugs, or to any employee of the same acting within the scope of his employment; or to public officers or their employees in the performance of their official duties requiring possession or control of narcotic drugs; or to temporary incidental possession by employees or agents of persons lawfully entitled to possession, or by persons whose possession is for the purpose of aiding public officers in performing their official duties.

Section 13—Common Nuisances—Any store, shop, warehouse, dwelling house, building, vehicle, boat, aircraft, or any place whatever, which is resorted to by narcotic addicts for the purpose of using narcotic drugs or which is used for the illegal keeping or selling of the same, shall be deemed a common nuisance. No person shall keep or maintain such a common nuisance.

Section 14—Narcotic Drugs to Be Delivered to State Official, etc.

All narcotic drugs, the lawful possession of which is not established or the title to which cannot be ascertained, which have come into the custody of a peace officer, shall be forfeited, and disposed of as follows:

(a) Except as in this Section otherwise provided, the court or magistrate having jurisdiction shall order such narcotic drugs forfeited and destroyed. A record of the place where said drugs were seized, of the kinds and quantities of drugs so destroyed, and of the time, place, and manner of destruction, shall be kept, and a return under oath, reporting said destruction, shall be made to the court or magistrate and to the United States Commissioner of Narcotics, by the officer who destroys them.

(b) Upon written application by the State Board of Health, the court or magistrate by whom the forfeiture of narcotic drugs has been decreed may order the delivery of any of them, except heroin and its salts and derivatives, to said State Board of Health for distribution or destruction, as hereinafter provided.

(c) Upon application by any hospital within this state, not operated for private gain, the State Board of Health may in its discretion deliver any narcotic drugs that have come into its custody by authority of this Section to the applicant for medicinal use. The State Board of Health may from time to time deliver excess stocks of such narcotic drugs to the United States Commissioner of Narcotics, or may destroy the same.

(d) The State Board of Health shall keep a full and complete record of all drugs received and of all drugs disposed of, showing the exact kinds, quantities, and forms of such drugs; the persons from whom received and to whom delivered; by whose authority received, delivered, and destroyed, and the dates of the receipt, disposal, or destruction, which record shall be open to inspection by all Federal or state officers charged with the enforcement of Federal and state narcotic laws.

Section 15—Notice of Conviction to Be Sent to Licensing Board.

On conviction of any person of the violation of any provision of this Act, a copy of the judgment and sentence, and of the opinion of the court or magistrate, if any opinion be filed, shall be sent by the clerk of the court, or by the magistrate, to the board or officer, if any, by whom the convicted defendant has been licensed or registered to practice his profession or to carry on his business. On the conviction of any such person, the court may, in its discretion, suspend or revoke the license or registration of the convicted defendant to practice his profession or to carry on his business. On the application of any person whose license or registration has been suspended or revoked, and upon proper showing and for good cause, said board or officer may reinstate such license or registration.

Section 16 — Records Confidential—Prescriptions, orders, and records, required by this Act, and stocks of narcotic drugs, shall be open for inspection only to Federal, state, county, and municipal officers, whose duty it is to enforce the laws of this state or of the United States relating to narcotic drugs. No officer having knowledge by virtue of his office of any such prescription, order, or record shall divulge such knowledge, except in connection with a prosecution or proceeding in court or before a licensing or registration board or officer, to which prosecutionor proceeding the person to whom such prescriptions, orders, or records relate is a party.

Section 17—Fraud or Deceit.

(1) No person shall obtain or attempt to obtain a narcotic drug, or procure, or attempt to procure the administration of a narcotic drug: (a) by fraud, deceit, misrepresentation, or subterfuge; or (b) by the forgery or alteration of a prescription or of any written order; or (c) by the concealment of a material fact; or (d) by the use of a false name or the giving of a false address.

(2) Information communicated to a physician in an effort unlawfully to procure a narcotic drug, or unlawfully to procure the administration of any such drug, shall not be deemed a privileged communication.

(3) No person shall willfully make a false statement in any prescription, order, report, or record, required by this Act.

(4) No person shall, for the purpose of obtaining a narcotic drug, falsely assume the title of, or represent himself to be, a manufacturer, wholesaler, apothecary, physician, dentist, veterinarian, or other authorized person.

(5) No person shall make or utter any false or forged prescription or false or forged written order.

(6) No person shall affix any false or forged label to a package or receptacle containing narcotic drugs.

(7) The provisions of this Section shall apply to all transactions relating to narcotic drugs under the provisions of Section 8 of this Act, in the same way as they apply to transactions under all other Sections.

Section 18—Exceptions and Exemptions Under All Other Sections.

Negatived: In any complaint, information, or indictment, and in any action or proceeding brought for the enforcement of any provision of this Act, it shall not be necessary to negative any exception, excuse, proviso, or exemption, contained in this Act, and the burden of proof of any such exception, excuse, proviso, or exemption, shall be upon the defendant.

Section 19—Enforcement and Co-operation—It is hereby made the duty of the State Department of Justice and Public Safety, its officers, agents, inspectors, and representatives, and of all peace officers within the state, and of all county attorneys, to enforce all provisions of this Act, except those specifically delegated, and to co-operate with all agencies charged with the enforcement of the laws of the United States, of this state, and of all other states, relating to narcotic drugs.

Section 20—Penalties—Any person violating any provision of this Act shall upon conviction be punished, for the first offense, by a fine not exceeding Five Hundred Dollars ($500.00), or by imprisonment in jail for not exceeding ninety days (90); or by both such fine and imprisonment, and for any subsequent offense, by a fine not exceeding One Thousand Dollars ($1,000.00), or by imprisonment in the state penitentiary for not exceeding two years or by both such fine and imprisonment.

Section 21—Effect of Acquittal or Conviction Under Federal Narcotic Laws—No person shall be prosecuted for a violation of any provision of this Act if such person has been acquitted or convicted under the Federal Narcotic Laws of the same Act or omission which, it is alleged, constitutes a violation of this Act.

Section 22—Constitutionality—If any provision of this Act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of the Act which can be given effect without the invalid provision or application, and to this end the provisions of this Act are declared to be severable.

Section 23—Interpretation—This Act shall be so interpreted and construed as to effectuate its general purpose, to make uniform the laws of those states which enact it.

Section 24—Inconsistent Laws Repealed—All Acts or parts of Acts which are inconsistent with the provisions of this Act are hereby repealed.

Section 25—Name of Act—This Act may be cited as the Uniform Narcotic Drug Act.

Approved March 14, 1935.

* * *

A great deal of comment has been made each year on the membership of the State Association. According to our Constitution, Chapter IV, Composition of Association: "This Association shall consist of members who shall be the members of the component medical societies who have been certified to the headquarters of this Association, and whose dues and assessments for the current year have been received by the Secretary." The component societies of our Association are the District Medical Societies. The district medical society is the sole judge of its membership. A careful study of our membership, comparing the same with other state associations and A. M. A., Journal A. M. A., Page 1,607, May 4, 1935, of organizations of constituent state associations.

There are 164,514 physicians in the United States of America. There are 58,774 Fellows of A. M. A., 44 per cent of physicians in the United States are Fellows of the A. M. A. Of the 164,514 physicians in the United States, 60.5 per cent are members of state associations. South Dakota has listed 495 in active practice, a membership, May 11, 1935, of 311; 62.6 per cent of practicing physicians in South Dakota are members of the Association. The following is a survey of physicians in the state:

A. M. A. Directory, 1935

Physicians in South Dakota	495
C. C. C. Camps	11
Indian Service	18
Veterans' Administration	13
Public Health	5
State Hospital	8
Retired	33
Total	583

Comparing Minnesota, Iowa, North Dakota, Montana and Nebraska:

Minnesota has a registration of 3,174, and membership of 2,239, or 70. plus per cent.

Iowa—3,141 physicians; 2,219 members, or 70. plus per cent membership.

North Dakota—511 physicians; 375 members—70. plus per cent membership.

Montana—480 physicians; 340 members—70.8 per cent membership.

Nebraska—1,772 physicians; 1,161 members—65.1 plus per cent membership.

Membership

District	No. of Paid Members	New Members
No. 1	45	4
No. 2	26	1
No. 3	16	..
No. 4	15	..
No. 5	18	..
No. 6	29	..
No. 7	55	8
No. 8	35	8
No. 9	45	1
No. 10	8	..
No. 11	9	..
No. 12	12	..
	311	22

Last year (1934) there were 292 paid members; this year there are 311. Membership for the past four years as follows:

1932	255
1933	229
1934	292
1935 (as of May 11)	311

Treasurer's Financial Statement

Balance on hand May 12, 1934, Aberdeen National Bank		$1,315.64
1934 Dues—May 13 to December 31		100.00
January 1, 1935, Cash C. D. No. 11528		94.19
Dues January 1, 1935, to May 11, 1935		1,555.00
Total		$3,064.83
Total Expenditures		1,999.19
Cash Balance		$1,065.64
Other Resources:		
Trust Cert., Langford State Bank No. 375	$ 735.92	
United States Bond	500.00	
		$1,235.92

Dr. E. A. Pittenger made special report on behalf of the State Planning Board.

Dr. Pittenger moved that the House of Delegates concur in action of the Council in appointing Dr. B. A. Dyar, of De Smet, executive secretary of the State Medical Association.

Dr. J. O. F. Kraushaar moved that the action of the Council, at the meeting this afternoon, be ratified by the House of Delegates on this resolution. Carried unanimously.

Report of Council. Dr. Cook read the minutes. Approved and accepted. (See minutes of the Council.)

REPORTS OF STANDING COMMITTEES

Report of Committee on Scientific Work: As chairman, Dr. A. S. Rider offered the Scientific Program as printed.

Report of Committee on Public Policy and Legislation: Dr. T. F. Riggs being absent, Dr. W. G.

Magee gave a synopsis of the work of the committee. No formal report.

Committee on Publications: Dr. Cook reported THE JOURNAL-LANCET as official organ.

Committee on Medical Defense: No report.

Committee on Medical Education and Hospitals: Dr. J. C. Ohlmacher gave a verbal report.

Report of Committee on Medical Economics

The Committee on Medical Economics has felt the responsibility resting on it very keenly during the past year because of the rapidly changing conditions surrounding the practice of medicine.

During the era of prosperity the members of the profession were little concerned about medical economics and each carried on in his or her own way, giving service to rich and poor alike according to the old established traditions of the profession. As long as the physician was fortunate enough to have a sufficient number of patients who paid their bills, little thought was given to the collection of the accounts of the many who could not or did not pay. The time has come, however, when physicians are called upon more and more to render services to a rapidly increasing number of poor pay or no pay patients and on the other hand a more rapidly diminishing number of good pay patients are being served. These conditions have afforded the opportunity for lay organizations and individuals to strike an entering wedge looking to the control and management of the practice of medicine.

Organized medicine and the individual physicians themselves are largely to blame for this unfortunate predicament. The individual human life is the one and only excuse for our existence and it is the duty of the medical profession to bring to everyone that comes under its care the full benefits of the science and skill of modern medicine. This distribution of service should really begin before the patients are born. In fact, it is part of the duty of the medical profession to see to it that every new life is born well. This means that the parents shall have healthy minds and bodies and that the environment and economic state shall be proper. It is our duty because of our knowledge of heredity and eugenics to see to it that proper laws relating to marriage and sterilization are enacted and enforced. We should be in touch with and have a voice in the problems concerning housing and sanitation. It is our responsibility to inaugurate and give out universal prenatal care and bring to the prospective mother every advantage of modern maternity practice. From this time on our efforts should be continued in the form of infant welfare, preschool clinics, immunization, and all types of preventive and corrective medicine, as well as proper care of illnesses and injuries that may arise.

No individual or group of individuals can possibly be as well fitted as the physician for the responsibility of directing and correlating all activities relating to the health of the individual, the family, the state, or the nation.

It is the hope of this committee that our South Dakota Medical Association will take immediate steps to place itself in active charge of all agencies having anything to do with the health of our people. We feel that the efforts of lay organizations to render assistance in important lines of work such as immunization clinics, preschool clinics, tuberculosis prevention, school inspection, and the like should be encouraged and every opportunity afforded such organizations as the Red Cross, State Public Health Association, American Legion and Auxiliary, and all other like-minded organizations, to assist by raising funds to help carry on the work among the indigent as well as assist the physician in doing this work. We condemn, however, the organization and promulgation of such work by laymen without even consulting the medical profession until after everything is arranged and then come to the doctors and offer them the opportunity to donate a day or two of their time to put across the pre-arranged and oftentime impractical program.

We believe that this sort of thing can be very successfully handled by the physicians of a county or district taking the initiative and organizing their own immunization and tonsil clinics and inviting the lay organzations to assist, as has been successfully done in Lake County during the past year. It is far better for this work to be planned and put across by the family physicians in their own offices or hospitals. Thus giving the patient the benefit of going to the physicians of their choice and receiving such treatment under the best possible conditions rather than by a wholesale slaughter in some schoolhouse or town hall.

We believe it is very desirable that a very close co-operation be maintained with the State Board of Health and the State Welfare Commission. The fact that two members of this committee are also members of the economics committee of the State Health Officers Association, attests the friendly and co-operative spirit that already exists between these two important organizations.

We believe that the State Medical Association should take steps to secure the co-operation of the State Dental Association, State Hospital Association, State Nurses Association, State Druggists Association, State Veterinary Association, and all other legitimate groups or organizations having anything to do with the health of the individual or the public. Another member of this committee will go into this phase in more detail.

We believe it to be the duty of organized medicine with the assistance of these allied workers to educate and enlighten the public along medical lines and public health. This can be done by the radio, newspapers, and also in person by individual physicians among their own patients.

Something must be done to put a stop to the ever-increasing patent medicine advertising which misleads the public into useless, expensive, and often dangerous self-medication. It will require united effort and expenditure of money by the allied groups to success-

fully combat this racket. Steps must be taken to eliminate outlaw practitioners. Membership in the State Association should not only be made more desirable but should be required. Uniform rates for county work should be established at reasonable rates and every legitimate physician who is a member of the Medical Association should be permitted to care for indigent county cases when called upon to do so.

The medical and hospital care of the indigent should be paid for by the county so that this expense is borne by all of the taxpayers instead of placing it all on those few taxpayers who have the added burden of being sick themselves which, of course, is the case when physicians and hospitals do this county work at a loss.

We believe that the FER should be under the direction of the State Medical and Allied Associations and that laymen should have no voice whatever in the administration of the funds available for medical relief.

If sickness insurance comes, it should be administered by the medical profession and not by lay politicians. The medical profession should have much more to say regarding the administration and operation of the Workmen's Compensation Law and private insurance companies who are making a racket out of this legislation for their own selfish interests, depriving the workmen of its benefits as well as making a catspaw out of the medical profession, should be eliminated.

Medical men and allied workers have it within their power to get control of these things and continue to bring to all of our citizens the most efficient medical service in the world, provided they strengthen their organization and secure the co-operation of everyone concerned.

D. S. Baughman, M.D.,
Chairman.

* * *

Main Object of Medical Economics—The main object of medical economics, as I see it today, is the regaining of leadership in all things that pertain to public health and public welfare. Therefore, we, as a committee, are submitting a simple plan to bring about the desired leadership of our medical groups.

We hear these days "economics" used frequently, and in most every connection. So, sometimes we stop to wonder what the real meaning may be, applied to the subject at hand. So the explanation of medical economics may not be out of place. The term "medical economics" means to investigate the conditions, laws, and regulations effecting the practice of medicine, the care of the sick and safeguarding the public health to the satisfaction of the medical profession as a whole, and proper distribution of compensation or emoluments in order that the physician may carry on.

In drawing up the report of your Medical Economics Committee, it is done so not only touching upon economics, but done in the form of a suggestion to our Association, of a simple plan whereby we embark upon a definite program. Even though it is simple, it should be far-reaching. Your committee has spared no effort nor time, as well as a great deal of personal expense, in investigating the cause of the proper distribution of health work into those hands that are not medically trained.

Your committee also has some definite ideas as to the cause of this mal-distribution. Therefore, our efforts in our report is not to criticize the officers of the present, nor in the past—their efforts, their successes or their failures to promote the welfare of organized medicine.

Your committee realizes that the changed condition, politically and economically, has so overwhelmed us that we have had no time to meet it. Therefore, this report and plan is submitted to you for your deliberation with great humility on the part of your committee, and hope that out of this suggestion may come something that will create a solidarity of the medical profession.

The following will be the definite outline and suggestion. It is being made with all due consideration to our Constitution and By-Laws, so as to minimize the changes necessary in it.

State Public Health Committee—First, we have as our deliberating body, a group known as the Council. This consists of a councilor from each component district, as well as a councilor at large. It is proposed that this body of thirteen members, in addition to their regular duties as outlined in our Constitution, be also designated as a Public Health or Public Relations Committee, and by their own deliberations, appoint sub-committees to establish direct contact with our State Board of Health and State Public Welfare Commission.

They shall meet at least once a month to establish periodically certain means and objectives, and to lay down sound principles and policies for the guidance of the Public Health Committee in each of the component medical societies. This committee should prepare a uniform report for all public health projects and furnish same to each district, so that all records may be permanently filed. It is suggested that a copy be filed with each county health officer and a copy to the State Board of Health.

Executive Secretary—It is further suggested that this committee shall employ an executive secretary, preferably a lay individual as an assistant to our duly elected secretary, whose duty will be to act as a liaison officer between all sub-divisions and groups associated with the medical association, as well as the number of non-medical groups. This officer is already provided for in our By-Laws. It is further suggested that this officer be appointed, and in the appointment, qualification should be the designated requirement.

District Public Health Committee—It is recommended that each district society appoint a public health committee of five members, to whom all public health projects involving medical service shall be re-

ferred for consideration and recommendations. It shall be the function of this public health committee in each district society to develop effective ways and means adapted to local conditions, and needs and consistent with the policies and principles established by the Public Health Committee of the State Medical Association.

In order that the medical profession present to the public a united front upon all public health matters, it is recommended that the public health committee of each component county society submit to the Public Health Committee of the State Association their recommendations to be made to their district medical societies for criticism and suggestions, before they are acted upon by the district society.

The purpose of such co-ordination in aims and objectives in the public health committees of the district and of the State Association is to make possible the conduct of statewide projects in which each district medical society takes part to promote widespread medical participation in public health projects. Such participation is to be centered in the physician's office to offset the further development of free clinics conducted by non-medical agencies.

Relation Between Groups—The relationships established in co-operative projects with other local district non-medical organizations interested in health should be clearly defined and be maintained through the activities of the public health committee in each district medical society. The relationships with organizations whose activities extend beyond the district are to be defined and maintained through the Public Health Committee of the State Medical Association. This committee acts as liaison between the state program and the local medical society's program as prepared by the Public Health Committee and approved by the local society.

Immunization Campaign—Specific health projects such as "Diphtheria Immunization Campaign" of the State Medical Association and State Board of Health. Each district medical society should co-operate in the statewide project approved by the State Health Committee and State Board of Health.

The public health committee of each district medical society should later on be encouraged to develop public health projects to meet their own local needs. They should try out experiments to determine those ways and means most effective under local conditions.

The public health committee of each district medical society should act as an advisory health committee to all agencies in the district that carry on public health activities. This committee should submit to the State Public Health Committee, their local program and plans for consideration and recommendations. This procedure would insure the least number of conflicts in aims and policies. Each district society should benefit from experiences gained in the other district societies. The State Public Health Committee will serve as a clearing house for such interchange of experiences in the form of detailed reports of their difficulties and successes. The secretary of the Public Health Committee of the State Medical Society should be available for help to local societies upon request.

County Health Officer—It is suggested and recommended that all work outlined by the District Public Health Committee for a county. Appoint as chairman of this committee the county health officer of that county. This not only ties the medical association to the State Board of Health, but recognizes a man in most instances that is familiar with that particular county's needs and requirements.

Office Clinics—In reference to the clinic being held in physicians offices, that the plan of the State Health Committee and the District Health Committee can be carried out by each physician willing to devote a certain time each week or month to this work.

It is suggested as a working plan that one hour a week or month be given to indigents in co-operation with county nurses and other welfare groups. During this hour, diphtheria immunization and smallpox vaccinations be given free, and the serum be provided by our State Board of Health, and for those who can pay, a minimum of $1.00 be charged.

With this suggestion, instead of a few, often distant, public clinics, and inadequate records, we could provide 600 or more clinics operating throughout the state in a year. In this way organizations such as the Parent-Teachers Association, and State Board of Health, hygiene nures, county nurses, school teachers, and similar persons and groups, can provide the publicity to acquaint the people with this offer.

One of the most important points in this connection is the bringing back into the hands of the profession and organized medicine the control of such health work, where it properly belongs. I have purposely failed to mention other work that will come up in this connection in the future as a start along this line, should not be too comprehensive.

Speakers Bureau — The committee believes and urges that a speakers bureau be organized under the direction of the State Association Public Health Committee. The function of this bureau should be to increase the efficiency of the practice of medicine in South Dakota, to promote the solidarity of the profession, talking to lay organizations, co-ordinating and organizing the dentists, nurses, veterinary and pharmacist associations, University Medical School, State Hospital Association, and the lay welfare groups, such as the 40 et 8, American Legion and others, and to form what may be called the Allied Council, consisting of two members of the medical association and two members each of the allied associations.

Allied Council—This Allied Council could then act as intermediary between the State Association Public Health Committee and its own various component districts. This would not only bring all groups closer together for the common good, but from a political standpoint, be very important to bring about needed reform from our state legislature.

The Speaker's Bureau could be enlarged upon by arranging to have post-graduate courses throughout the state and this would be of unquestionable value in bringing an improvement in the standard of the profession. This bureau should also furnish speakers for the various organizations doing welfare work and it would be conducted through the profession where it properly belongs.

State Institutions—The committee also suggests a special connection between all of our state institutions, such as the State Hospital for Insane, Hospital for Feeble-Minded, Hospital for Tuberculosis, and the Industrial Schools, in order to bring about a closer relationship and a more general knowledge of what is being done by these institutions by the profession at large.

FERA Set-Up—Federal Emergency Relief's set-up is already in operation and the committee suggests only closer co-operation through its State Public Health Committee, with a view of assisting and developing this set-up to a higher efficiency.

Furthermore, as the time passes and such a set-up is no longer needed, the association through its district societies, public health committees, develops such a plan for caring for the indigent, whom we will always have with us, to replace the useless county physician in most counties, that a special fee bill be adopted between the county commissioners and the district public health committees, in order that we can maintain the family physician and patient's relationship.

Your committee has purposely not presented the mechanics of this plan and hookup, believing there are more qualified men in the association to develop the mechanics and the technique. The committee further believes, as they did a year ago, that there should be a fund appropriated for this purpose. Having been denied any assistance along this line, the committee has done the best they could, even at a personal as well as financial sacrifice.

The committee also desires to extend to all lay organizations who have pioneered in co-operation with the medical profession, the deep appreciation for their financial assistance and for their wonderful humanitarian regard, not only for the suffering humanity, but also the prevention of unnecessary deaths and disabling illnesses of the childhood and the youth of today.

It is not the thought of the committee to criticize these leaders, even though they be lay persons, but rather to criticize ourselves for allowing them to assume such responsibility without more of our helpful assistance, and that we pledge ourselves to cooperate more extensively in the future in order to bring about a mutual understanding. Thereby we will assume the leadership that should exist.

Dissemination of Projects—The committee believes there should be dissemination of all activities to each and anyone who is a member of organized medicine at least once during any one month and that this can be accomplished either through the JOURNAL-LANCET or by the executive secretary in a letter such as has been sent out through the courtesy of our superintendent of the State Board of Health.

WM. F. BUSHNELL, M.D.

* * *

It is presumed that all physicians appreciate the radical unthought change taking place in social life and affairs which shall affect in a most drastic fashion the economic status and future welfare of the individual physician and his profession. All physicians will suffer for it. Medicine, so called, with its lofty ideals and traditions—altruistic as they always have been, shall be destroyed and the public shall not have long to wait to suffer for its folly in smothering the ever-active medical genius that previously has been spent on seeking out relief and solace.

While some physicians have suffered because of their rigid adherence to these ideals and ethics—many may have prospered by their abuse, but most physicians have respected them and merited happiness and satisfaction therefrom. The standards were always high, the record great and dignified and all members of the profession gloried in it. Groups and societies formed in districts, state and nation have been many, but only for research, study and scientific advancement. No thought ever was given to factors governing its economic existence. With the development of improved hygiene, sanitation and disease prevention, all of which have meant so much to mankind, with the practical application and mechanics completely given over to lay people to administer while the profession always withdrew to the laboratory or the bedside to further serve. But these trusted lay individuals in charge of these great social needs mastered well this handiwork and developed themselves into social workers, who are now, in this new trend of social and political existence, setting prettily, in a position to direct and execute—making mere menial of medicine and its works. Till now professional societies, lay groups and associations having to do with medical relief, welfare and public health offices, etc., all served their purpose, adhered to the principles of the profession, but are inadequate today and will all be subsidized by this newly trained lay personnel.

It is not too late to recoup—to at least save something of the old-time power and prestige of the profession. It will only come through **Organized and Unified Action.** This must be realized by all physicians and surely all should lend themselves and their effort with the roster of their fellows, through their societies, for their very self-preservation—for the attainment of their professional ideals and for the welfare of the public. It is being said that only the physicians of the lower bracket incomes are concerned—that the third or fourth of the physicians who have been smiled upon by Dame Fortune are not interested—and if this be true, then these men are either short-sighted as to their future welfare, or they are not loyal to the grand group and standards that made their success possible. I am satisfied that these

men for the most part are concerned and will join in at this critical time.

While handicapped in many ways, we in South Dakota are in favorable position because of the small number of physicians and the isolation due to location and conditions. We can do much to offset a route and protect our activities, and work to maintain medical and professional leadership through the offices and groups already established. Too, we shall be able to perfect an alignment of the inter-related professional groups so as to present a united front against any assault or abuse from the politics of the state. Many plans are being suggested and tried over the land, but your Economics Committee suggests the following, which fits well into the schismatic showing which is to follow.

1. The Medical Association of the state and its component districts must contain all the physicians who shall give deliberation and unqualified support to all projects—each being a delegated representative of organized medicine. Medical Association and offices must be respected and represented in all projects.

2. Offices and committees must be executive and ever alert, active and directive.

3. All policies, programs and agreements affecting medical services are to be drawn up by the State Medical Society if the project is to be statewide in its activities. The ways and means must be adapted to the local conditions and needs. If the activities are confined to the city or county—the district society in a similar way will act for the medical profession. This will elevate the standards of appointive medical offices by removing them from political patronage to that of professional preferment.

4. Co-ordination of medical services rendered by individuals, groups or district societies in all statewide programs is to be affected by the officers and committee members of the state and district societies through their executive officers.

5. All medical services in co-operative community projects are to be paid for, unless all other personnel serve also without remuneration.

6. Family physicians are the units which must provide sound preventive as well as sound curative medical service in all programs.

This particularly links up all groups having to do with medical programs.

A. The State Board of Health and its component units, the county health officers—wherein belong certain well-defined projects. These shall have society endorsement. These offices functioning properly with the co-operation of the physicians, there would be no occasion for special commissions operating as we have today (infantile paralysis, tuberculosis).

B. The South Dakota Public Health Association has not in the past had responsible medical direction nor proper co-operation from the physicians. This should come through appointments by the State Medical Association of members for its directorate—acceptable to the Association. The districts likewise should forward names for the county units.

C. Public institutions having to do with health programs should be more closely aligned. With an exchange of ideas and interests with the physicians and their societies, advantages gained would be mutual. Certainly the University with its medical school and laboratory should be. Should not the establishing of a state nursing school have some study and plan from physicians before placing it in an agricultural division away from what should be its natural environment, the medical school, its faculty, laboratories, etc.? Does it not suggest that the real thought is to train social workers and not really nurses? Sanator, surely, and Yankton, Redfield, and the schools of the deaf and blind should not be so foreign to the physicians of the state.

D. Inter-professional Relationship — Physicians, dentists, druggists, veterinarians and later nurses and hospitals. An allied medical council, made up of committees of two each from these groups, should be formulated in every district and likewise in the state, which council would be cognizant of any and all allied activity. The potential power—THE VOTING STRENGTH—of such an alliance is quite apparent and would soon be evidenced by the "powers that be" and would also stimulate thought, action and organization strength in the respective groups.

E. Physicians should be informed. Regular letters should go out to all physicians from the State Association or be continued as has been so graciously started by the superintendent of the State Board of Health in compliance with a committee request from the South Dakota Health Officers Association.

Further and particularly recommended is:

1. A full-time lay secretary of the State Association would probably be most advantageous, but probably out of reach because of finance. However, a competent office girl should be available to the officers to keep up membership, keep them informed and active and attend the usual office routine.

2. South Dakota Medical Association should have a permanent office at Pierre or some accessible city.

3. Further, support of medical radio broadcast over WNAX started by the State Medical Association last year. Further consideration of promotion of publicity would be available through the committee of the allied groups.

a. Local newspaper stories and articles of public interest calling attention to worthwhile ethical articles in popular magazines, of which there are many, advertisements of insurance companies, drug houses, etc.

b. Appropriate window displays of druggists, and timely educational health notices in the press from the county health officers.

4. Last, but not least, to further advance and enact the basic laws of science.

DON'T FORGET:

EMERGENCY RELIEF — LOCAL, STATE AND FEDERAL—MOST CERTAINLY INTERLOCK WITH THESE GROUPS MENTIONED AND WITH THE PHYSICIANS AT LARGE.

RIGHT NOW THE DESTINIES OF THE MEDICAL PROFESSION ARE PROBABLY IN THE HANDS OF THE DIRECTORS OF THE FEDERAL RELIEF WHO MAY BE CARRYING OUT A PRE-CONCEIVED PLAN OF EDUCATION AND PREPARATION OF SOCIAL WORKERS AND NURSES SO AS TO BE ABLE, AFTER THE SETTLING OF THIS ECONOMIC UPHEAVAL AND THE ENACTMENT OF SUITABLE LEGISLATION, TO MANAGE AND CONTROL ALL PROJECTS AND OFFICES PREVIOUSLY DIRECTED BY PHYSICIANS **AND** THIS TO THE ABSOLUTE SUBJUGATION AND REGIMENTATION OF THE MEDICAL PROFESSION. IT MAY BE WELL FOR THE PHYSICIANS OF THE STATE TO LOOK TO ORGANIZATION AND THE DEVELOPMENT OF PLANS AS OUTLINED, BUT BEGINNING RIGHT NOW THROUGH ITS STATE ASSOCIATION CONCENTRATE ALL STUDY AND EFFORT TOWARDS OBTAINING PLACE IF NOT PROMINENCE IN THE PRESENT **STATE AND FEDERAL RELIEF ADMINISTRATION.**

THE ASSOCIATION MUST REGISTER STRENGTH — APPROACH 100 PER CENT MEMBERSHIP, MUST CENTRALIZE INTERESTS AND ACTIVITIES PERTAINING TO MEDICINE, MUST BE IN POSITION TO REGISTER QUICK ACTION THROUGH ITS OFFICES AND COMMITTEES WITH RESPONSIBILITY TO ACT.

THE DAY IS PAST, AS WAS STATED A YEAR AGO, OF MANY OFFICERS FOR A FORMAL APPEARANCE ONE YEAR HENCE, AND COMMITTEES TO BRING IN STEREOTYPED REPORTS.

This report was referred to the Reference Committee, consisting of Drs. D. S. Baughman, B. A. Dyar and E. W. Jones.

Committee on Hygiene and Mental Health: Dr. I. M. Freshour reported.

Report of Committee on Hygiene and Mental Health

Your Committee on Hygiene and Mental Health begs leave to submit the following report for the past year.

A meeting was held on April 28th in Yankton, at which all of the members of the committee were present.

Hygiene conditions throughout the state have been fairly good considering the distressing economic conditions, drouth and the devastating dust storms. In the latter part of 1934, the organization of the Public Health Committee of the South Dakota Planning Board was effected, and if their various projects can be consummated, a marked step forward will be made in hygienic and public health matters. It deals with: First, tuberculosis and ways and means of eliminating its predisposing factors; second, maternity and infancy and a means to promote conditions under which hazardous methods may be eliminated; third, typhoid fever, the incidence of permanent carriers, sewage disposal and the sanitary improvement of water and milk supplies; fourth, the adequate labeling of certain proprietary preparations containing poisons which, by accident or careless handling, may be injurious to human life; fifth, determine the percentage of dairy cows having acute or chronic mastitis, determine the responsible organism and the relaxation of such infections to public health, also to determine to what extent uninspected meat and diseased animal food is used; sixth, the question of mental hygiene, which would look to the training of teachers in this particular subject and provide for the examination and personality study of children not making normal progress, also consider the facilities for retarded and otherwise maladjusted children.

Already progress has been made by these committees, particularly the committee on tuberculosis, which has begun the registration of all patients suffering from this condition.

The committee would like again to call attention to the work being done for the registration and care of crippled children throughout the state under the able direction of Dr. Lottie Bigler, of the Division of Child Hygiene. For details of this work the committee recommends that all physicians read the reports sent out regularly by the director. The committee wishes to go on record as being in accord with the director's views as to the method of care and placing for treatment of the crippled children.

The committee regrets that no heed was paid to recommendations made in former reports. Reference is made to the suggestion relative to the placing of a speaker on mental hygiene on our state scientific program.

The committee also commends the work of the FER nurses throughout the state, but feels that much more would be accomplished if they would work entirely in co-ordination with the physicians.

The committee feels that health work throughout the state is at present handled in a rather haphazard manner. Now is the time to formulate some plan of co-ordination of health activities. The Indiana plan of health co-ordination appears one that could easily be adapted to our needs. This plan calls for a central Advisory Health Council, the personnel of which is in four main subdivisions—first, the State Division of Public Health; second, Medical Association; third, the University, and fourth, the lay organizations. The committee recommends that the South Dakota State Medical Association take immediate steps toward the formulation of this or some similar plan.

In view of the fact that there are several standing committees pertaining to public health, of which hygiene is one, there is considerable overlapping and little knowledge of the exact duties of each committee. Therefore, the present hygiene committee recommends that the By-Laws be amended to consolidate the committee on hygiene, Advisory Committee, co-operating with State Board of Health, and Advisory Committee, co-operating with South Dakota Public

Health Association "National Tuberculosis Association," under one heading, the Committee on Public Health.

Ina Moore-Freshour, M.D.,
Goldie Zimmerman, M.D.,
Clarence E. Sherwood, M.D.,
Committee.

This report was referred to the Reference Committee on Constitution and By-Laws, as it calls for amendment to By-Laws. Reference Committee consisting of Drs. J. C. Ohlmacher, R. B. Fleeger and N. K. Hopkins.

Committee on Cancer: Report by Dr. W. R. Ball.

Report of Committee on Cancer

Continuing a program for an educational campaign to further the knowledge of the diagnosis and treatment of cancer as recommended by the American Society for the Control of Cancer, your committee this year has concentrated on a "symposium of tumors of the uterus." All district societies have been so advised and have been supplied with pamphlets and literature relative to cancer of the uterus, with requests to devote one program during the year to this important subject. About half of the societies have responded to this time; some districts have had men from outside of the state to give greater incentive for attendance.

Cancer talks have been given during the year to service clubs and nursing groups; four talks have been broadcast from WNAX by Dr. S. M. Hohf. These papers were prepared by members of the State Association.

The following report is made by Dr. N. J. Nessa on the status of radium in treatment:

When a surgeon with a tremendous experience in cancer like Dr. J. C. Bloodgood states that about 50 per cent of his cancer patients, who were formerly operated, are now referred to the radium and X-ray specialist, it carries with it a definite conviction that modern methods of irradiation have definitely proved their therapeutic value. This does not apply purely to the advanced or inoperable types, but to patients in whom surgery was formerly indicated. In view of the recent advances in this highly specialized field, surgeons, gynecologists and clinicians in general have been encouraged to expect greater efficiency from the new methods of radiation therapy in cancer. Surgery in the early and operable type of cancer is still of greatest value, though despite its greatest technical perfection, it has not made an appreciable dent in the morbidity or mortality of the disease within the last twenty-five years. Radium and X-ray, on the other hand, have steadily forged ahead because of a more intelligent appreciation of the important principles which determine the success or failure of the therapeutic irradiation.

As a whole, malignant conditions hitherto given over to irradiation are still preferably treated in that manner, and during the last year this form of therapy has been tried in several hertofore uncontrollable conditions with prospects of hopeful results. The work along these lines, especially in the field of general medicine, is encouraging and further clinical results are awaited with interest.

The biological effect of irradiation is the same whether Gamma rays of radium are used or X-rays, once these rays and wave-lengths are absorbed by the tissue cells, the only difference being that a higher percentage of depth dose is delivered with the harder or shorter rays. The question of results centers around the tissue of radiosensitivity which occupies the center of the problem of irradiation. The young, or immature cells are more radiosensitive than old or adult cells; in other words, the cells in the stage of mitosis are the most sensitive to irradiation, and it follows that cells with a short life cycle are most frequently in the mitotic phase.

Also, experimentation has disclosed the more important fact, that each variety of cells in the body has a specific sensitivity, or a specific range of sensitivity to irradiation. This deserves to be recognized as a dominant law of radiology. In other words, all tissue, whether normal or pathological, is either hypo-sensitive or hyper-sensitive, and may be classified according to the radiosensitivity in the following order:

1. Lymphoid cells.
2. Polymorphonuclear.
3. Epithelial.
4. Endothelial.
5. Connective tissue.
6. Muscle cells.
7. Bone cells.
8. Nerve cells.

It may be readily understood then that pathological tissue, whether new growth or inflammatory, can be successfully treated by irradiation according to the radiosensitivity of the lesion, which again corresponds to the cellular matrix from which it originates.

(Signed) Dr. N. J. Nessa.

In view of the fact that cancer now ranks second in cause of death in the registration area of the United States, your committee advises a continuation of the study of prevention and treatment of cancer.

We hereby move your approval of this report.

(Signed)
W. R. Ball, M.D.,
N. J. Nessa, M.D.,
F. Koren, M.D.

Report of Committee on Necrology

Your Committee on Necrology wishes to report the death of the following members of this Association, and those physicians in South Dakota who were not members of this Association, during the past year.

Alexander Felix Toohey, Beresford, S. D.; John A. Creighton Medical College, Omaha, 1899; aged 57; died April 19, 1934, in a hospital at Sioux City.

William McK. Housman, Sioux Falls, S. D.; Cincinnati College of Medicine and Surgery, 1877; member of the South Dakota State Medical Association; aged 80; died, May 17, 1934, of angina pectoris.

Evert Rodenhuis, Corsica, S. D.; Detroit College of Medicine 1895; aged 70; died, March 5, 1934, of arteriosclerosis.

James Franklin Paddleford, Miller, S. D.; Kentucky University Medical Department, Louisville, 1904; member of the South Dakota State Medical Association; served during the World War; since 1919 superintendent of the county board of health; at various times county coroner; aged 65; died, November 18, 1934, in Sioux Falls S. D., of myocarditis.

Ellis Herbert Whitehead, Brookings, S. D.; State University of Iowa College of Medicine, Iowa City, 1904; served during the World War; aged 66; died, December 19, 1934, in Soux Falls, S. D.; of carcinoma of the pancreas.

John Harvey Adair, Wall, S. D.; Eclectic Medical Institute, Cincinnati, 1877; aged 82; died, November 20, 1934, in Rapid City, S. D.; of carcinoma of the hard palate.

Abel Mathias, Rapid City, S. D.; University of Pennsylvania School of Medicine, Philadelphia, 1865; aged 91; died Nov. 11, 1934, of cerebral hemorrhage.

Hugh O. Morgan, White, S. D.; Fort Wayne (Ind.) College of Medicine, 1894; aged 66; died January 2, 1935.

James Peter Valby, Sioux Falls, S. D.; College of Physicians and Surgeons of Chicago, 1890; aged 78; died, January 23, 1935, of cerebral hemorrhage.

Dennis Francis O'Connor, Elkton, S. D.; University of Minnesota Medical School, Minneapolis, 1890; aged 70; died February 12, 1935, of dilatation of the heart.

John T. Wingate, Platte, S. D.; Albany (N. Y.) Medical College, 1908; aged 53; died suddenly, November 17, 1934, of heart disease.

George E. Countryman, Aberdeen, S. D.; Missouri Medical College, St. Louis, 1888; on the staff of St. Luke's Hospital; aged 69; died April 24, 1934, of cerebral hemorrhage.

Edmund Delos Putnam, Sioux Falls, S. D.; Omaha Medical College, 1897; aged 61; died April 1, 1935, of cerebral arterial sclerosis.

Joseph Schwartz, Sioux Falls, S. D.; University of Iowa, 1893; aged 70; died April 13, 1935.

Henry Bohan Noble, Howard, S. D.; Missouri Medical College, St. Louis, 1882; for many years county health officer; aged 86; died January 10, 1935, in Manchester, Iowa, of coronary thrombosis.

Gebhard Joseph Long, Jr., Ramona, S. D.; Rush Medical College, Chicago, 1909; member of the South Dakota State Medical Association; aged 49; died, February 22, 1935, of lobar pneumonia.

Emilie E. Sullivan Rauch, Belvidere, S. D.; Sioux City, (Ia.) College of Medicine, 1903; county health officer; aged 71; died, January 31, 1935, of carcinoma of the cervix and myocarditis.

Arthur Clarke Dean, Hot Springs, S. D.; Jefferson Medical College, Philadelphia, Pa., 1917; Member of the South Dakota State Medical Association; aged 47; died December 1, 1934, in St. Mary's Hospital, East St. Louis, Ill., of hemorrhage from duodenal ulcer.

(Signed)

M. J. Hammond, M.D.
Thos. Cruickshank, M.D.
W. H. Saxton, M.D.

REPORTS OF SPECIAL COMMITTEES

Report of Advisory Committee Co-operating With State Board of Health

Dr. J. O. F. Kraushaar presented the following resolution:

"Complying with the Rules and Regulations as set forth in the Federal Emergency Relief Rule No. 7, which provides that 'The policy adopted shall be to augment and render more adequate facilities already exsiting in the community for the provision of medical care by the medical, nursing and dental professions to indigent persons.' Federal Emergency Relief funds shall not be used in lieu of local and/or State funds to pay for these established services."

"BE IT FURTHER RESOLVED, That because of the abuse of medical relief by certain contract county physicians, no further medical relief authorizations shall be given to contract county physicians."

Dr. E. M. Young, Chairman of the Advisory Committee co-operating with State Board of Health, gave the following report:

The personnel of this Committee is, Drs. J. A. Hohf, Yankton; G. E. Van Demark, Sioux Falls; J. O. F. Kraushaar, Aberdeen; and E. M. Young, Mitchell. On account of the fact that we are located in the four corners of the eastern part of the State, our activity was carried on by mail. This report covers a two year period and is made without a personal meeting of the Committee. It therefore, represents my personal opinion as influenced by correspondence with the other members of the committee.

There is just one important fact to report. We found no difficulty whatsoever in securing the co-operation of the State Board of Health as voiced by its Secretary Dr. Park B. Jenkins; in fact he seemed as anxious for co-operation as we could desire. We were uninstructed as to what to accomplish after we secured "co-operation" but in my conversation with Dr. Jenkins he informed me that a new epidemiologist was soon to be appointed and he would be glad to have our Association suggest a candidate. This information was conveyed to President Magee and the Committee on Public Policy and Legislation. I think our Dr. Dyar was appointed. In my opinion we would do well to get the idea out of our heads that the State Board of Health is antagonistic to the State Medical Assocaition.

Dr. Van Demark suggested that we emphasize and commend the contact work done by Dr. Lottie Bigler and the excellence and volume of the orthopedic work accomplished over the state.

On Nov. 14, 1934, the State Health Officers Association in a meeting at Huron adopted a resolution urging the co-operation of all physicians of the state which I suppose you all received in the first News Letter. I should like to read it to refresh your memories. Quote: On this committee were Drs. W. F. Donahoe, Sioux Falls; Wm. F. Bushnell, Elk Point and E. C. Smith, Mission.

The nucleus of an organization is accomplished, the spirit of co-operation is evident and I would recommend

that the Council take action to mold this committee in an organization to combine with the State Health Officers Association and the State Board of Health.

E. M. Young, M.D.

Report of Committee on Radio Broadcasting

Your committee appointed by this body last year, submits the following report:

After returning to our homes following the appointment, as the Broadcasting Committee of the State Association, the magnitude of the duties involved began to dawn.

To designate the authors, suggest the subject matter to be discussed, determine the length of the papers to be put on the air in the rigid limited time available, select the most desirable period of the day for broadcasting and to have on had, when needed once a week, a paper promptly and properly edited to be put on the air, were only some of the difficulties or unknown quantities that confronted your committee.

After considerable correspondence and personal contact with various members of the Association, all of which was time consuming, your committee came to the decision that since there are twelve component societies of the Association in the State, the scheme of designating in numerical order the various districts to fill the program for corresponding months during the year, was adopted. This was merely undertaken as a tryout. If it could not be carried out successfully and without interrupting the program, it would be necessary to adopt some other method.

Your committee has been pleased with the reception of this method, up to the period of writing this report. It has proven satisfactory with one exception.

To aid us in our new adventure, it was deemed necessary to call into action, the Secretary of the State Association. He was asked, in order to obtain authors, to communicate with the various district secretaries, urging them to obtain the requisite number of papers for the weekly broadcasts, for the designated month.

The response to this request up to and including May has been indeed gratifying, some districts actually exceeding their quota.

Your State Secretary has also suggested subjects and title heads for the various authors and thus, in at least two important phases of the program, he has lightened the burdens of the committee very greatly.

The length of the papers to be discussed was determined by trial and it was found that to put a talk on the air as it should be, the utterances should not exceed 100 to 110 words per minute.

The time of broadcasting was determined very largely by our broadcasting station WNAX, which suggested the hour following the Sunday evening luncheon and before the movies, 6:45 to 7:00 P. M. We believe this is an advantageous period.

After overcoming the first hurdles, which always seem the most unsurmountable, it was decided to put on the first broadcast during the month of December. Your President of the Association was the author of the opening talk broadcasted December second. Members of your committee and the State Secretary occupied the other periods of the month.

Aberdeen District No. 1 was designated to fill the program for January and responded with four papers; Watertown District No. 2 for February, presenting five papers; Madison District No. 3 for March, presenting four papers; Pierre District No. 4 for April, presenting two papers; for the present month Huron District No. 5 has presented four papers, two of which have already gone on the air.

During the six months' period of the operation of broadcasting, it has been necessary to call on "pinch-hitting" papers on several different occasions. These lapses were, in the main, due to unavoidable delays for which the districts could not, properly, be held responsible. Pierre District, however, fell down in the first half of her program. It was in filling this program that all of our additional papers, other than those designated for the month, were drawn upon to fill the vacancies. At this point, your committee for the first time suffered an attack of the jitters, but by sending out the distressful S. O. S. signal to our State Secretary, oil for the machinery was quite promptly forthcoming.

It is essential that the various papers be in the hands of the committee at least thirty days in advance of their broadcasting. This is necessary owing to the fact that editing in many instances is essential and especially in the reduction of the quantity. It is evident the authors become so enthused when once beginning on their subjects, that it is difficult to cut loose and by so doing over-reach the time allotted for their broadcast. Submitting the papers to the several members of the editing board is time consuming. Furthermore, it is comforting to know that the program can go on without interruption, and papers in hand well in advance assures this position. We trust that members of the Association will give this due consideration.

It is urged that additional papers, other than those designated for the month, be in the hands of the committee in order that when lapses occur, substitute papers may be immediately available. In this way only, can a possible break in the program be avoided. A break must not occur.

The work undertaken by the State Association in broadcasting thus far has been of inestimable value. It has proven that members of our Association are capable and as well qualified to discuss affairs medical as can be found in any group of men in the profession anywhere, and that we can look with justifiable pride upon the products of their pens. We wish to compliment the various members on their literary attainments.

Your committee is more and more encouraged as time goes on, by the complimentary response the public is making to these educational programs. They are indeed worth while. Our people are not only anxious but actually athirst in their quest for authoritative medical information. The loose slush that is only too frequently heard over the air eminating from quacks, cults and commercial medical interests should be combated and neutralized by legitimate medicine. We have in our hands a powerful weapon and its value is limited only in our ability to deliver. Your committee feels

that organized medicine in the state of South Dakota is eminently capable of delivering and it strongly urges that not only for the remainder of this year but in following years, this valuable educational work be continued.

You should be informed that all papers, after being put on the air, are immediately forwarded to the State Secretary, in whose possession they are placed as Custodian of the Association.

In conclusion, your committee recommends that a word of appreciation by this body be extended to The House of Gurney for its courtesy in making available the facilities of Station WNAX at Yanton for these medical broadcasts.

Respectfully submitted.

(Signed)
S. M. Hohf, M.D., *Chairman*,
E. W. Jones, M.D.,
E. L. Perkins, M.D.

Advisory committee co-operating with South Dakota Public Health Association "National Tuberculosis Association."—Dr. E. A. Pittenger reported verbally.

Dr. Pittenger urged the President to appoint three Doctors of the South Dakota State Medical Association to act as an advisory committee.

Editorial Committee of Journal-Lancet—Verbal report by Dr. S. M. Hohf.

Committee on Military Affairs—No formal report. Dr. D. A. Gregory reported that the Commanding General of the 7th Corps Area requested that such a committee be appointed as a part of preparedness program.

Advisory Committee to Woman's Auxiliary—Verbal report by Dr. W. G. Magee.

Moved and seconded that the above reports as given be adopted. Carried.

New business.

Dr. S. M. Hohf moved, and duly seconded, that the arrangement with The Journal-Lancet as the official organ be continued for another year at $1.00. Motion carried.

Motion to adjourn.

J. F. D. Cook, M.D.,
Secretary-Treasurer.

PRESIDENTIAL ADDRESS

by

W. G. Magee, M.D.

Watertown, S. D.

"SOCIALIZED MEDICINE—NO!"

The practice of medicine had its origin in the far distant past. Primitive man, the ancient ancester of the present generation, was a savage who roamed the earth, ignorant of the phenomena of his existence or of his surroundings. Fear of death was uppermost in his mind. He feared his fellow man, the wild beasts that inhabited the mighty forests, and fled in terror from such natural phenomena as thunder and lightning. He attributed all of his misfortunes, including disease, to evil spirits that in his imagination peopled the air about him. To protect himself from these evil spirits he invented good spirits, charms, and mystic rites. In due time some one member of the clan or tribe appeared to be more successful than others in combating these evil influences. This man became the magician or medicine man of the clan. He was the progenitor of the physician.

Later, as primitive man became more enamored with the idea of good spirits aiding him in his fight against the evil ones, this medicine man became a priest who served the good spirits or gods. Religion was, therefore, added to the practice of medicine. The origin of medicine was, therefore, mysticism, magic and religion. Primitive man believed that spirits inhabited all animate and inanimate objects. Some of these objects he thought contained good spirits, hence certain herbs and parts of certain animals were given to the patient in order that the good spirits might enter into their bodies and drive out the evil ones that were causing disease.

As man's intelligence gradually increased his desire to protect himself from disease and its sequence, death, was manifested in other additions to this early art of medicine; namely, astrology and the science of numbers which were thought to influence his health. The numbers, four, seven and thirteen were considered of especial importance. The rays of light from Luna, the moon, under certain conditions were supposed to produce insanity, hence designation "Lunatic" was applied to an insane person. From these old beliefs we of the present generation have inherited superstition, such as the belief that a child born at seven months was more likely to live than one born at eight months. Throughout many ages the art of medicine was a mixture of religion, mysticism, and magic.

About four hundred years before the birth of Christ there lived in Greece a physician, whose name was Hipprocrates. He became the greatest physician of his age. We learn that he was the first to recognize the error of mysticism, magic, and religion in medicine. He taught that disease was cured by the natural powers of the body. He practiced bedside observation of symptoms, examined the secretions of the body, and investigated the digestibility of various foods. He established the practice of medicine on a rational basis. He also composed a code of ethics to govern the conduct of physicians. He declared that the true physician must be a man of honor,

true to himself, and honorable in his dealing with all men. This ancient code is the basis for the present code of ethics that is in use today by the medical profession. In this day of many codes we of the medical profession can point with pride to this ancient code of ours that has been a lamp to guide the members of our profession throughout all the centuries of the past.

Gradually the science of medicine progressed until today we find not a finished product but a system that has reduced the incidence of disease to a point that is nothing short of miraculous. The death rate from disease has dropped to 9.6 per 1,000, and nearly twenty years has been added to man's age of expectancy. The number of newborn infants that may reasonably expect to reach maturity has been vastly increased. Trench after trench of man's great enemy, entrenched disease, has been taken in our war on that dread enemy of the human race. There remains much more to be done before disease will be entirely under control.

During all of these centuries past the physician has never faltered in his endeavor to serve suffering humanity.

The physicians from Hippocrates down to the past century developed medicine more as an art than as a science; however, for the past hundred years the science has made rapid strides and at present has outstripped the art. Art may be defined as the skill and facility with which knowledge is applied to get results. Science is systematized knowledge which is demonstrable of proof. Science is the foundation stone of modern medicine and is as essential to the success of the modern practitioner as is heat and light to growth. The study of medicine is the study of a science, but its application to the treatment of the sick is an art, but an art which should be based on scientific knowledge. Art is just as essential a factor in treating the patient as are science and time in treating his disease.

The science of medicine may be learned from books and in the laboratory, but the art of successful practice is not so learned. With some it seems to be a gift, but it may be acquired by cultivation and experience and by association with those who possess it. It is apparently acquired more readily by those who are capable of inspiring their patients with hope. A man of mediocre scientific ability will sometimes outstrip one of far more scientific attainment by more skilfully applying what he knows, than does his more scientific competitor. There is need for cultivating the art as well as the science at the present time, if one expects to minister to the individual sick.

The most successful physician will be the one who lays a good foundation based on scientific knowledge, and then acquires the art of skillfully applying that knowledge.

A physician has a great responsibility upon his shoulders. Health, happiness and life itself depend upon our ability to diagnose a condition, to apply the specific remedy, to keep our nerves steady and our minds clear. To us has been intrusted the almost divine art of healing the sick, ushering into the world new life, and giving peace to an earth-tired spirit. And because of this sacred trust it is our duty not only to fit ourselves for the work, but to do all in our power to advance the science of medicine. We should encourage, advise and assist those who are fitted for its practice, and forever drive from the fields of medicine and surgery those who are a menace to life and health and an insult to our noble calling. In a little more than a century, the medical profession has done more for the race than has ever before been accomplished by any other body of men. These gifts to the people have come in the form of vaccination, sanitation, anesthesia, antiseptic surgery, the new science of bacteriology, and the new art in therapeutics have affected a revolution on our civilization.

Medicine is the most difficult of sciences and the most laborious of arts; it taxes the powers of body and mind. A doctor who is true to the ideals of his profession will not place a monetary value as his first consideration on his services, but the welfare of the patient and the restoring of his health should be the first and paramount consideration in his mind.

Each year opens up a few new avenues of thought and action to the physician. Notwithstanding the alluring promises of statesmen to bring about "better financial days" for the physician, as well as for everyone else, the thoughtful physician knows quite well that conditions are such that credits must be accorded his clientele. The country, generally, is very much like the physician's seriously sick patient—recovery is slow and prolonged. But we who are keenly interested in our own, as well as our country's welfare should continue to be optimistic, and give our aid to honest officeholders in their strenuous efforts to rehabilitate economic conditions. And, as we so often assured our seriously ill patients that they were bound to recover, especially if they should do what we told them to do, we should continue to encourage our worried senators and representatives by assuring them that prosperity maybe just around the corner—and that good times surely will come—again.

Today we are facing in this country many conditions which affect the entire medical profession, every member of it, and if the medical profession is as passive to its welfare in the future as it has been in the past, it will face not only financial and economic ruin and loss of prestige, but also will find itself enslaved, shackled to centralization of power made possible by laws passed customs permitted by laity and politicians, its dignity crushed and beggared.

Free clinic service has quadrupled in a decade; medical men now treat gratis 500,000 of the nation's daily sick list of 1,250,000.

Pay clinics have had a recent mushroom growth. They were designed for downtrodden white-collar workers, and operate on a system of small fees. Doctors must give their services free while other employees are paid.

Competitors have been chiseling fat slices from the national medical dollar; Osteopathy, $42,-000,000 a year, Chiropractic, $63,000,000; besides livings for 3,000 naturopaths and 10,000 Christian Science practitioners.

Lesser bad breaks for the family doctor's pocket-book have included free hospitalization of veterans and mass production contract system of medicine fostered by insurance companies and compensation clinic work.

In spite of shrinking incomes among its members, the profession has officially denied that the system of private practice is threatened. Socialization of medicine, which might insure practitioners bread and butter in the form of salaries, doctors claim would undermine medical ethics.

There are many paid agents who go through the country sowing seeds of personal antagonism to organized medicine. Some are so clever in phrasing their expressions that they beguile the unwary and attract to their untried schemes many who believe them. It is not uncommon for these destroyers to openly state that they never have any fault to find with the present system of medicine, that it is unfortunate there is so much dissension in the ranks of organized medicine, and that we must consider the layman's view point in the practice of medicine. If anyone raises his voice in opposition to their theories, he is immediately regarded as an obstructionist, one incapable of appreciating life, and is accused of advancing ignorant opposition to change. Now I wish you particularly to note that there is such a thing as opposition to ingnorant change. Almost invariably such propagandists exaggerate the hoped for results of their system and belittle the efforts of thousands of consecrated physicians who have worked unceasingly and often without remuneration for the preservation of general health.

You are told that organized medicine was unprepared for the emergency that was forced upon it in the last few years of economic disruption. You might listen to such arguments and be convinced of their sincerity if medicine was in such a deplorable state, and I assure you it is not as badly off as many other professions. Even our detractors admit that medicine is not the only division of society which to their minds is in a chaotic state.

I am, and I trust you are, quite satisfied with the arguments that are advanced for a plan of medical service which says the physician is to be given his proper place in the sun, and then new schemes are thrust upon him to take from him his right to practice; and I refer in this connection particularly to the statements that the State Health Department wants you, the practicing physician, to carry on and then in the face of that announcement builds and subsidizes new clinics to compete with you and attract the patients whom you are prepared to protect and care for.

I cannot see how it is possible for anyone to harmonize these facts. We are living in a strange age when those whose livelihood depends upon the physician hold him up to ridicule.

The State and local Boards of Health are only our agents and must not attempt to become dictators, for you and I as taxpayers support them.

Isn't it time that the logical body, organized medicine, be given its proper place as the Master in the House of Medicine? Because we have performed our kindly beneficient work without the flare of trumpets and clashing of cymbals, does it lessen its value or does it really reflect our genuine desire to prevent and cure illness?

Too many laymen receive their wages from outside medical agencies. We as physicians must take a stand against any more smooth, mustical word combinations. Those opposed to logical progress in medicine will say that I do not represent the majority of those who are in practice. Ask them for proof. Continue to ask for confirmation of their statements which are almost invariably spread by press and air as though the result of serious thought and study instead of being a reflection of their propensity to sit in the spotlight.

The National and state governments are at this time attempting to force upon you untried methods which, however, embody features that have previously failed when put in operation. It is said that organized medicine advances nothing in

the way of constructive criticism. A ten-year-old school boy could make a phrase just as forcible and just as senseless.

At a meeting of the American Medical Association the report of the committee headed by Dr. Nathan B. Van Etten, of New York, was accepted. I trust that all of you have read it. It is the pronouncement of the American Medical Association representing one hundred and ten thousand practicing physicians.

"First: All features of medical service in any method of medical practice should be under the control of the medical profession. No other body or individual is legally or educationally equipped to exercise such control.

"Second: No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of the medical service must be borne by the profession.

"Third: Patients must have absolute freedom to choose a duly qualified doctor of medicine who will serve them from among all those qualified to practice and who are willing to give service.

"Fourth: The method of giving the service must retain a permanent, confidential relation between the patient and a 'family physician.' This relation must be the fundamental and dominating feature of any system.

"Fifth: All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service should be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

"Sixth: However the cost of medical service may be distributed the immediate cost should be borne by the patient, if able to pay at the time the service is rendered.

"Seventh: Medical service must have no connection with any cash benefits.

"Eighth: Any form of medical service should include within its scope all qualified physicians of the locality covered by its operation who, when asked, wish to give service under the conditions established.

"Ninth: Systems for the relief of low income classes should be limited strictly to those below the 'comfort level' standard of income.

"Tenth: There shall be no restrictions on treatment of prescribing not formulated and enforced by the organized medical profession."

The origin of all criticism against the present system of medical practice comes from just two groups, the so-called philanthropic foundations and the State Board of Health.

The discussions of the health of a community are always befogged by the overshadowing, sometime obscuring clouds referring to the economic status of the patient. No one ever heard of a poor or a deserving patient being refused proper medical care.

The new set-up proposed by so-called social uplifters embodies the same old misconception of obligation on the part of the physician and lack of appreciation by the laity. In one place the socializers tell us that preventive medicine should be stressed and that the proper one to do this is the trained private physician, while at another time they suggest that he be relegated to the background and that medical service be dispensed in practically the same way that alcohol is today.

As an example of what state medicine would mean, I ask each and every one of you to analyze the benefits that you receive from the Workmen's Compensation Law, those which you got from the CWA, and then those that you are receiving under the present Welfare Act.

At present we are facing many important problems, the solution of which will demand study, careful planning and much hard work. The medical colleges are turning out more physicians than can be used in the present state of society. The incomes of the masses have been lowered to such a level that the average physician in actual practice is not receiving more than half the income received in 1929. Laymen, social workers, health workers, politicians, department store owners, would-be reformers, economists, socialists, antivivisectionists are all trying to change the present method of medical care so that it will concur with their ideas.

It is quite clear that we are opposed to so-called socialized medicine. It is quite evident that the term "socialized medicine" is a red flag to many physicians. It is quite true that we have state medicine in many forms which is accepted as a matter of course and no one seems to get excited about it. The care of the insane by the state, which we have had for the past 100 years, is a definite form of state medicine. The State Laboratory for the diagnosis and treatment of malignant diseases is truly state medicine. The manufacture and distribution of various vaccines, toxoids, and many other biologic preparations, are state medicine. The hospitalizing of the indigent

patient, paid for by the city, county or state is state medicine. The building of county and state hospitals for the care of tuberculosis is state medicine. The hospitalizing and treating of our veterans in government hospitals is state medicine. To what form of state medicine is it that the practicing physician or doctor objects?

The family physician should be protected in all such endeavors that his training and education have prepared him for in the diagnosis and care of the sick and injured. He should be permitted to be in charge of and supervise all health examinations, not only of school children but of adults, the administering of vaccines, toxoids, and other biologic remedies. If we are to continue the practice of medicine as now constituted—and by this he means that the family physician will be retained as such to administer to the sick and injured, that he will be able to retain his patients and individuals—the formation of groups, either by lodges, insurance companies, or other forms of group practice, should be discouraged.

The welfare departments in larger cities are paying the physician or physicians a salary for the care of the indigent. The purpose of this arrangement is better to budget their funds. It has many objections: (1) A practicing physician who has a salaried job usually takes care of his private work at the expense of his salaried work. This is only human. (2) It often occurs if an indigent person is very ill or demands too much attention, that the case is sent to the charity ward of the hospital causing the city to pay for double service. (3) Too often the city physician is a political appointment, and is not appointed for his ability but for his political influence and, as a result, gives inferior service. (4) A physician on a fee basis will always respond more promptly than one on a salary.

There has never been a time when the human race, the nations of the world, and our profession in particular needed intelligent, careful and thoughtful common sense leadership as it does today. Therein lies a challenge to all of us, to bring forth the best, the most substantial traits which we possess and apply them to our future problems which are just being opened up by our present situation.

This is not the goal of our endeavors, but simply the starting point for a wide variety of projects that need our immediate attention.

This is an era of rapidly changing ideas and ideals. It is good for us to come together for these annual meetings and discuss our problems. The subjects which I have discussed in this paper are not new, but every one of them is of vital interest and importance to the members of our profession. It is well for us to consider them carefully, decide for ourselves what is the right and honest course to pursue. We are not good politicians. We are not able to push medical bills through the legislative mill. However, the weight of our united opinion is powerful, and I have the conviction that, standing together, deciding our problems honestly and unselfishly, the moral influence of our profession will be sufficient to accomplish a satisfactory solution for any of our numerous medical problems.

ADDRESS OF PRESIDENT-ELECT

by

A. S. Rider, M.D.

Flandreau, South Dakota

Members of the South Dakota State Medical Association, ladies and gentlemen:

I wish to express my appreciation of the honor you have conferred upon me and to assure you that my time will be at your disposal for any effort in behalf of our association that you may desire.

This is not a legislative year, therefore, we are not asking the legislature to do anything for us; and what is equally important, we will not need to fear that they will do anything to us. While secure at home, we are not so safe at Washington.

I have here a copy of a proposed bill which would, if adopted by the states, provide health insurance for all working people in the United States except farm and domestic labor and employees of concerns with less than three persons. It is estimated that it would provide medical service for 90 per cent of the population of large industrial cities and would handle over a billion and a half dollars annually.

There are at all times in the United States about three million people who are ill. Seven hundred thousand hospital beds are occupied daily. Nine hundred thousand are mentally incompetent. On hundred thousand are blind. Seven hundred thousand have active tuberculosis and four hundred thousand suffer from diabetes. Our working people lose two hundred and fifty million work days each year from illness. When our national income was ninety billion dollars, a little less than three billion was spent for medical service. Of this, 25 per cent went to doctors, 30 per cent went to hospitals and clinics, 25 per cent for nursing and medical supplies, and three per cent for public health services. The rest was more or less wasted. If you would know what I mean

by wasted, listen to the ballyhoo over the radio or read the advertisements in your papers.

In considering the problem of medical care, it is convenient to divide the population into four groups:

First, the wealthy. This rapidly diminishing class have the dollars and need only the sense to obtain adequate medical service. They do not enter our problem.

Second, the employed. Those receiving wages and salaries. This group is able to meet the expenses of ordinary illness, but it has been found that families earning less than $60.00 a week are unable to budget the expense of prolonged or extraordinary sickness.

Third, the unemployed. These people may have some savings, but they are not usually able to meet the expense of prolonged or severe illness, and if unemployment is long continued, they are soon unable to meet the expense of any illness.

Fourth, the poor. Those whom the Bible says we shall always have with us. People, who in times of prosperity, because of inherited or acquired mental or physical incompetence, always have been, are, and always will be a burden upon the community. It is, therefore, evident that at the present time there exists a problem of medical care affecting all classes of our people except the wealthy.

Medical care to be efficient must conform to certain principles.

First, it must be personal. Ninety per cent of medical service consists of home or office visits, treatment of colds, minor surgery, obstetrics, and general medicine. Less than 10 per cent is affected by public health measures. Efficient medical care requires confidence between physician and patient to a greater degree than any other human relationship.

Second, efficient medical care must be organized. When I was a medical student, 90 per cent of the graduated went into general private practice. Now, perhaps half of the graduates become specialists, associate themselves with clinics, enter hospital, public or industrial service. There is urgent need for a better correlation between the family physician and the specialist. This is a pressing problem. In my opinion the solution lies in a more highly trained family physician who should be built up to be the key man in medical service.

Third, efficient medical care must be on a sound economic basis. Private or public funds must be available to meet the expense and the service must be organized with due regard to the means available.

The greatest problem of the cost of medical care is the unevenness of its distribution. A family or individual may escape for years or suffer only slight ailments and then be literally overwhelmed with prolonged, expensive and disabling illness. The onset of catastrophic sickness finds its parallel in such economic visitations as tornadoes, fire, hail or earthquakes. Our people have been accustomed to seek the protection of insurance against such economic storms and so the idea of health insurance soon suggests itself. We have had voluntary health insurance for a long time. Compulsory health insurance was instituted by Bismarck in Germany to stem the rising tide of socialism. It spread quickly to England and over the continent. As is provided in this bill, a fund is raised by contributions from employer, employee, and the government. The advantages claimed for health insurance are:

First, it distributes the cost of sickness.

Second, it brings medical service to low income groups, 47 per cent of whom have never had medical care.

Third, it enables physicians to exist in communities where they could not otherwise.

Fourth, it provides people with physicians of their own choice.

Fifth, it provides pay for medical service for which physicians would otherwise receive no compensation.

The experience in Europe with compulsory health insurance, however, shows that it is better in theory than in practice. Panel physicians in England are reported as showing little interest in keeping up to date or doing post-graduate work. They tend to become superficial in diagnosis and show a lack of personal interest in their patients. It encourages a tendency to report illness in order to obtain money. It encourages undue prolongation of convalescence from trivial illness. Physicians find it difficult to deal honestly with both patient and insurance fund. If the physician feels that the applicant is not really in need of sick benefits, that he is able to work, or should return to work before he chooses to do so, he is apt to arouse resentment and in time will find an empty waiting room. Patients who find their doctor helping put something over on the insurance companies lose confidence in his competence and integrity and are apt to seek other advice in times of stress. The whole purpose of the insurance plan is thereby defeated.

A survey in Munich in 1930 divided the patients who applied to the Krankenkasse into three groups:

First, those who would seek a doctor if they

were paying for it from their own funds—30 per cent.

Second, those who came for trivial complaints which they would have ignored were they paying their own bills—65 per cent.

Third, those who sought benefits to which they had no rights—five per cent.

In the first year of the survey, 15 per cent of the members applied for benefits, and 95,000 hospital bed days were required. In the last year, nearly 40 per cent applied, and 470,000 bed days were demanded. These figures mean that 70 per cent of the cost of health insurance were expended on people who had no particular need, while the 30 per cent in real need received the benefit from only 30 per cent of the amount they had paid.

I believe it can be asserted with confidence that the best medical care is obtained when the independent patient chooses a well-trained family physician. If he pays him with respect and appreciation as well as with money he will receive in return competent service that will be adequate for 90 per cent of his needs, and valuable assistance and co-operation in obtaining such special care as he may require.

One might ask, "Why this particular interest in medical care?" Is not proper and sufficient food of equal importance? Is not adequate clothing and comfortable housing deserving of consideration? If medical care is to be organized on a charity basis at the expense of the medical profession, should not these other services be organized in a similar way at the expense of the groups supplying them? Why select the medical profession for special treatment?

I have here a summary of a report of the national survey of potential productive capacity. This interesting document comes from the same government and the same administration that has brought forth this Plan for Perpetual Poverty called the Health Insurance Bill. It states that our present industrial and agricultural set-up operated at normal capacity can provide $4,400.00 worth of goods and services for every American family each year. It would seem that the problem of medical care would be solved if the second and third groups of our people were to receive the share of the national income to which they are entitled.

Scientific achievement, progress in the technique of industrial and agricultural production has brought abundance to our door. We have plenty of everything except the intelligence to distribute it. The present policy of our leaders indicates to me one thing—bewilderment. An economy of scarcity they understand. An economy of abundance is a new thing and leaves them bewildered. To meet this new situation, instead of trying to distribute plenty, they are attempting to restore scarcity. They are plowing up cotton, destroying pigs, withdrawing land from production, and setting up codes to regulate industry. Their reaction might be illustrated by a story of an old country doctor who was called in to see a difficult case by one of his younger confreres. The old doctor examined the patient, puzzled for a while, then took some medicine from his case and administered it to the patient. The young man asked him what he thought was the matter and what he had given him the medicine for. The old doctor replied, "I don't know what's the matter with him, but I gave him some medicine to throw him into fits, and I'm hell on fits."

Friends, there lies heavy on my heart a great fear. These people might be consistent. I am told there are too many doctors. They might carry their thinking to its logical conclusion and shoot every third doctor and thereby restore the economic balance. However, to make their program more effective, they would probably select the young and more active and leave the more shopworn members to carry on. I personally derive comfort from that thought.

DISTRICT AND COUNTY ROSTER

ABERDEEN DISTRICT MEDICAL SOCIETY—NO. 1

PRESIDENT
Hill, Robert ..... Ipswich

SECRETARY-TREASURER
Mayer, R. G. ..... Aberdeen

Adams, J. F. ..... Aberdeen
Ahlfs, J. J. ..... Conde
Alway, J. D. ..... Aberdeen
Bates, W. A. ..... Aberdeen
Breckle, J. F. ..... Northville
Brinkman, W. C. ..... Veblen
Bruner, J .E. ..... Aberdeen
Bunker, Paul ..... Aberdeen
Calene, J. L. ..... Aberdeen
Cook, J. F. D. ..... Langford
Cooley, F. H. ..... Redfield
Cowin, A. W. ..... Redfield
Creamer, F. H. ..... Dupree
Eckrich, J. A. ..... Aberdeen
Farrell, W. D. ..... Aberdeen
Fletcher, R. H. ..... Britton
Gelber, M. R. ..... Aberdeen
Gerdes, O. H. ..... Eureka
Hill, Robert ..... Ipswich
Hogeboom, C. F. ..... Frederick
Jackson, E. B. ..... Aberdeen
Jones, T. D. ..... Bowdle
Keegan, Agnes M. ..... Aberdeen
King, Owen ..... Aberdeen
Kraushaar, J. O. F. ..... Aberdeen
Lein, Horace ..... Herried
Lowe, C. E. ..... Mobridge
Lundquist, C. G. ..... Leola
McCarthy, P. V. ..... Aberdeen
Mayer, R. G. ..... Aberdeen
Murdy, B. C. ..... Aberdeen
Murdy, R. C. ..... Aberdeen
Murphy, T. W. ..... Bristol
Olson, C. L. ..... McIntosh
Pittenger, E. A. ..... Aberdeen
Potter, G. W. ..... Redfield
Ranney, T. P. ..... Aberdeen
Rice, D. B. ..... Britton
Rudolph, E. A. ..... Aberdeen
Sarchet, Geo. ..... Mobridge
Schmidt, I. H. ..... Faulkton
Spirey, A. W. ..... Mobridge
Weishaar, C. H. ..... Aberdeen
White, W. E. ..... Ipswich
Whiteside, J. D. ..... Aberdeen
Zachritz, G. F. ..... Faulkton

WATERTOWN DISTRICT MEDICAL SOCIETY—NO. 2

PRESIDENT
Kenney, H. T. ..... Watertown

SECRETARY-TREASURER
Jorgenson, M. C. ..... Watertown

Ash, J. C. ..... Garden City
Bartron, H. J. ..... Watertown
Bates, J. S. ..... Clear Lake
Brown, H. Russell. ... Watertown
Christensen, A. H. ..... Clark
Freeburg, H. M. ..... Watertown
Hammond, M. J. ..... Watertown
Hershkowitz, S. T. ..... Clear Lake
Johnson, A. E. ..... Watertown
Jorgenson, M. C. ..... Watertown
Kenney, H. T. ..... Watertown
Kilgard, R. M. ..... Watertown
Koren, F. ..... Watertown
Lockwood, J. H. ..... Henry
McIntyre, P. S. ..... Bradley
Magee, W. G. ..... Watertown
Richards, G. H. ..... Watertown
Scallin, Paul R. ..... Clark
Sherwood, H. W. ..... Doland
Sherwood, J. S. ..... Doland
Tarbell, H. A. ..... Watertown
Vaughn, J. B. ..... Castlewood
Watson, E. S. ..... Estelline
Wilkinson, E. A. ..... Hayti

MADISON DISTRICT MEDICAL SOCIETY—NO. 3

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Goldman, E. W. ..... Madison

SECRETARY-TREASURER
Sherwood, C. E. ..... Madison

Baughman, D. S. ..... Madison
Davidson, Magni. ..... Brookings
Engelson, C. J. ..... Brookings
E. W. Goldman ..... Madison
Jordan, L. E. ..... Chester
Miller, H. A. ..... Brookings
Mokler, V. A. ..... Wentworth
Rowe, A. N. ..... Brookings
Sherwood, C. E. ..... Madison
Tillisch, Henrik. ..... Brookings
Torwick, E. E. ..... Volga
Torwick, E. T. ..... Volga
Vollmer, F. J. ..... Howard
Westaby, J. R. ..... Madison
Westaby, R. S. ..... Madison
Whitson, G. E. ..... Madison

PIERRE DISTRICT MEDICAL SOCIETY—NO. 4

PRESIDENT
Kimble, O. A. ..... Murdo

SECRETARY-TREASURER
Robbins, C. E. ..... Pierre

Bigler, Lottie G. ..... Pierre
Burgees, R. E. ..... Gettysburg
Hart, B. M. ..... Onida
Jenkins, P. B. ..... Pierre
Jordon, A. A. ..... Highmore
Kimbal, O. A. ..... Murdo
McLaurin, A. A. ..... Pierre
Martin, H. B. ..... Harrold
Morrissey, M. M. ..... Pierre
Northrup, F. A. ..... Pierre
Riggs, T. F. ..... Pierre
Robbins, C. E. ..... Pierre
Ramsey, Guy ..... Philip
Salladay, I. R. ..... Pierre
Triolo, Antony ..... Philip
Zeiss, F. ..... Onida

HURON DISTRICT MEDICAL SOCIETY—NO. 5

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SECRETARY-TREASURER
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Buchanan, R. A. ..... Huron
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Cogswell, M. D. ..... Wolsey
Feige, C. A. ..... Canova
Griffith, W. H. ..... Huron
Hagin, J. C. ..... Miller
Grosvenor, L. N. ..... Huron
Mattlock, W. L. ..... Huron
Saylor, H. L. ..... Huron
Saxton, W. H. ..... Huron
Scheib, A. P. ..... Hitchcock
Sewell, H. D. ..... Huron
Thomas, Benj. ..... Huron
Tschetter, J. S. ..... Huron
Tschetter, Paul ..... Iroquois
Turner, J. F. ..... Miller
Wood, T. J. ..... Huron
Wright, O. R. ..... Huron

MITCHELL DISTRICT MEDICAL SOCIETY—NO. 6

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SECRETARY-TREASURER
Lloyd, J. H.....Mitchell

Ball, W. R.....Mitchell
Bobb, B. A.....Mitchell
Bobb, C. S.....Mitchell
Bollinger, W. F.....Parkston
Bosch, Calvin .....Mt. Vernon
Case, T. J.....Delmont
Cochran, F. B.....Plankington
Crawford, B. E. ....Chamberlain
Delaney, Wm. A.....Mitchell
Dick, L. C.....Spencer
Gifford, A. J.....Alexandria
Gillis, F. D.....Mitchell
Jenkinson, H. E....Wess. Springs
Jones, E. W.....Mitchell
Kelly, R. A.....Mitchell
Lloyd, J. H. .....Mitchell
McClellen, S. A.....Kennebec
Mabee, Don R.....Mitchell
Mabee, O. J.....Mitchell
Malloy, J. F.....Mitchell
Maytum, W. J.....Alexandria
Privett, L. B.....Geddes
Rohwer, R. T.....Mitchell
Stegman, S. B.....Salem
Stewart, F. H.....Kimball
Tobin, F. J. .....Mitchell
Tobin, L. W.....Mitchell
Waldner, J. L.....Parkston
Young, E. M.....Mitchell

SIOUX FALLS DISTRICT MEDICAL SOCIETY—NO. 7

PRESIDENT
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SECRETARY-TREASURER
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Billingsley, P. R.....Sioux Falls
Billion, T. J.....Sioux Falls
Brandon, P. E.....Sioux Falls
Carney, J. G.....Sioux Falls
Carney, Myrtle S.....Sioux Falls
Clark, J. C.....Sioux Falls
Cottam, G. I. W.....Sioux Falls
Craig, D. W.....Sioux Falls
Culver, C. F.....Sioux Falls
Day, H. J.....Sioux Falls
Dehli, H. M.....Colton
DeVall, F. C.....Garretson
Dickenson, W. E.....Letcher
Donahoe, S. A.....Sioux Falls
Donahoe, Wm. E.....Sioux Falls
Eagan, J. B.....Dell Rapids
Ericksen, E. G.....Sioux Falls
Ericksen, O. C.....Sioux Falls
Fisk, R. R. .....Flandreau
Fitzgibbon, Gratton ...Sioux Falls
Forsberg, C. W.....Sioux Falls
Gage, E. E. .....Sioux Falls
Gregg, J. B.....Sioux Falls
Groebner, O. H.....Sioux Falls
Grove, A. F.....Dell Rapids
Hannon, L. J.....Hartford
Hanson, O. L.....Valley Springs
Hummer, H. R.....Sioux Falls
Hyden, Anton.....Sioux Falls
Keller, S. A.....Sioux Falls
Keller, W. F.....Sioux Falls
Lamb-Barger, Hazel H.....
.....Sioux Falls
Lanam, M. O. .....Sioux Falls
Lendgren, C. V.....Estelline
Moe, A. J.....Sioux Falls
Mullen, R. W.....Sioux Falls
Nessa, N. J.....Sioux Falls
Nilsson, F. C.....Sioux Falls
Opheim, O. V.....Sioux Falls
Pankow, L. J.....Sioux Falls
Parke, L. L.....Canton
Pearce, A. R.....Sioux Falls
Perkins, E. L.....Sioux Falls
Reagan, R.....Sioux Falls
Rider, A. S.....Flandreau
Roberts, W. P. .....Sioux Falls
Sackett, R. F.....Parker
Stenberg, E. S.....Sioux Falls
Stern, M. A.....Sioux Falls
Stevens, Geo. A.....Sioux Falls
Stevens, R. G.....Sioux Falls
Van Demark, G. E....Sioux Falls
VerMeulen, Peter ....Sioux Falls
Volin, H. P.....Lenox
Zimmerman, G. E....Sioux Falls

YANKTON DISTRICT MEDICAL SOCIETY—NO. 8

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SECRETARY-TREASURER
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Adams, G. S.....Yankton
Beal, L. F.....Irene
Benesh, L. C. .....Freeman
Bright, H. F.....Elk Point
Brookman, L. J.....Vermilion
Burkland, P. R.....Vermilion
Bury, C. L. .....Geddes
Bushnell, J. W.....Elk Point
Bushnell, W. F. .....Elk Point
Conner, E. L.....Alcester
Crecelius, H. A.....Volin
Cruickshank, Thos.....Vermilion
Freshour, Ina M.....Yankton
Greenfield, J. C.....Avon
Hanson, H. F.....Vermilion
Haug, L. A.....Beresford
Hyden, Andrew .....Alcester
Hill, John F.....Yankton
Hohf, J. A. .....Yankton
Hohf, S. M.....Yankton
Johnson, Geo. E. .....Yankton
Joyce, E.....Hurley
Kalayjian, D. S. .....Parker
Kauffman, E. J.....Marion
Keeling, C. M.....Springfield
Landmann, G. A.....Scotland
Leonard B. B. Y.....Yankton
Lietzke, E. T.....Beresford
Meyer, W. L.....Centerville
Moore, F. A.....Yankton
Morehouse, E. M.....Yankton
Ohlmacher, J. C.....Vermilion
Stansbury, E. M.....Vermilion
Treirweiler, J. E.....Yankton
Willhite, F. V.....Redfield

BLACK HILLS DISTRICT MEDICAL SOCIETY—NO. 9

PRESIDENT
Hummer, F. L.....Lead

SECRETARY-TREASURER
Baker, R. M.....Sturgis

Allen, A. G.....Deadwood
Baker, R. M.....Sturgis
Bestgen, F. P.....Sturgis
Chassell, J. L.....Belle Fourche
Clark, O. H.....Newell
Coslett, F. .....Senator
Crane, H. L. .....
.....La Oroya, Peru, S. A.
Davis, J. H.....Belle Fourche
Dawley, W. A.....Rapid City
Doyle, J. I.....Rapid City
Ewald, Paul P.....Lead
Fleeger, R. B.....Lead
Geyerman, P. T.....Hot Springs
Hare, Carlyle .....Spearfish
Hargens, C. W.....Rapid City
Havlicek, T. L. .....Sanator
Heineman, A. A. .....Wasta
Howe, F. S.....Deadwood
Hummer, F. L.....Lead
Ince, H. J. T.....Rapid City
Jackson, A. S. .....Lead
Jackson, R. J.....Rapid City
Jernstrom, R. E. .....Rapid City
Kegaries, D. L.....Rapid City
Lemley, R. E. .....Rapid City
Mattox, N. E.....Lead
Miller, Geo. H.....Spearfish
Minty, Earl W.....Rapid City
Miller, S. F.....Senator
Minty, F. W. .....Rapid City
Morsman, C. F.....Hot Springs
Newby, H. D.....Rapid City
O'Toole, T. F....New Underwood
Owen, N. T.....Rapid City
Pemberton, M. O.....Deadwood
Radusch, Frieda J.....Rapid City
Richards, F. A.....Sturgis
Richardson, W. E.....Philip
Sherrill, S. F.....Belle Fourche
Smiley, J. C.....Deadwood
Stewart, J. L.....Nemo
Stewart, N. W.....Lead
Threadgold, J. O....Belle Fourche
Townsend, L. J.....Belle Fourche
Walters, C. A.....Belle Fourche
Walsh, J. M.....Rapid City
Walton, J. B.....Martin
Zarbaugh, Guy F.....Deadwood

ROSEBUD DISTRICT MEDICAL SOCIETY—NO. 10

PRESIDENT
Walters, J. S.....Winner

SECRETARY-TREASURER
Overton, R. V. .....Winner

Carmack, A. O.....Colome
Kenaston, H. R.....Bonesteel
Malster, R. M.....Carter
Overton, R. V.....Winner
Quinn, R. J. .....Burke
Smith, E. C. .....Mission
Walters, S. J. .....Winner
Wilson, F. D.....Winner

KINGSBURY CO. DISTRICT MEDICAL SOCIETY—NO. 11

PRESIDENT
Rozendahl, P. H.....Lake Preston

SECRETARY-TREASURER
Peeke, A. P. .....Volga

Bostrom, A. E.....DeSmet
Butler, C. A.....Lake Preston
Dyar, B. A.....DeSmet
Grove, E. H.....Arlington
Hopkins, N. K.....Arlington
Jamieson, G. V.....DeSmet
Peeke, A. P. .....Volga
Rozendahl, P. H.....Lake Preston
Scanlon, D. L.....Volga

WHETSTONE VALLEY DISTRICT MEDICAL SOCIETY—NO. 12

PRESIDENT
Brown, A. E.....Webster

SECRETARY-TREASURER
Judge, W. T.....Milbank

Brown, A. E.....Webster
Flett, Chas. .....Milbank
Gregory, D. A.....Milbank
Harris, H. G.....Wilmot
Hawkins, A. P.....Waubay
Hayes, Clara E..New York, N. Y.
Hedemark, T. A.....Revillo
Judge, W. T. .....Milbank
Karlins, W. H.....Webster
Peabody, H. C.....Webster
Peabody, P. D. .....Webster
Porter, O. M.....Sisseton

ALPHABETICAL ROSTER

Abts, F. J.....Yankton
Adams, J. F. .....Aberdeen
Adams, G. S.....Yankton
Ahlfs, J. J.....Conde
Allen, A. G. .....Deadwood
Alway, J. D.....Aberdeen
Ash, J. C.....Garden City
Baker, R. M.....Sturgis
Ball, W. R.....Mitchell
Bartron, H. J. .....Watertown
Bates, J. S.....Clear Lake
Bates, W. A.....Aberdeen
Baughman, D. S.....Madison
Beal, L. F.....Irene
Benesh, L. C. .....Freeman
Bestgen, F. P.....Sturgis
Bigler, Lottie G. .....Pierre
Billingsley, P. R.....Sioux Falls
Billion, T. J.....Sioux Falls
Bobb, B. A.....Mitchell
Bobb, C. S.....Mitchell
Bollinger, W. F.....Parkston
Bosch, Calvin .....Mt. Vernon
Bostrom, A. E.....DeSmet
Brandon, P. E.....Sioux Falls
Brenckle, J. F.....Northville
Bright, H. F.....Elk Point
Brinkman, W. C. .....Veblen
Brookman, L. J.....Vermilion
Brown, A. E.....Webster
Brown, H. R. .....Watertown
Bruner, J. E.....Aberdeen
Buchanan, R. A.....Huron
Bunker, Paul .....Aberdeen
Burgess, R. E. .....Gettysburg
Burkland, P. R.....Vermilion
Burman, G. E.....Carthage
Bury, C. L. .....Geddes
Bushnell, J. W.....Elk Point
Bushnell, W. F.....Elk Point
Butler, C. A.....Lake Preston
Calene, J. L. .....Aberdeen
Carmack, A. O.....Colome
Carney, J. G. .....Sioux Falls
Carney, Myrtle S.....Sioux Falls
Case, T. J.....Delmont
Chassell, J. L.....Belle Fourche
Christensen, A. H. .....Clark
Clark, J. C.....Sioux Falls
Clark, O. H.....Newell
Cochran, F. B. .....Plankinton
Cogswell, M. D.....Wolsey
Conner, E. L.....Alcester
Cook, J. F. D.....Langford
Cooley, F. H. .....Redfield
Coslett, F. .....Senator
Cottam, G. I. W.....Sioux Falls
Cowin, A. W.....Redfield
Craig, D. W.....Sioux Falls
Crane, H. L..LaOroya, Peru, S. A.
Crawford, B. E. ....Chamberlain
Creamer, F. H.....Dupree
Crecelius, H. A.....Volin
Cruickshank, T.....Vermilion
Culver, C. F.....Sioux Falls
Davidson, Magni .....Brookings
Davis, J. H.....Belle Fourche
Dawley, W. A.....Rapid City
Day, H. J. .....Sioux Falls
Dehli, H. M.....Colton
Delaney, Wm. A.....Mitchell
DeVall, F. C.....Garretson
Dick, L. C.....Spencer
Dickenson, W. E.....Canistota
Donahoe, S. A. .....Sioux Falls
Donahoe, Wm. E.....Sioux Falls
Doyle, J. I.....Rapid City
Dyar, B. A. .....DeSmet
Eagan, J. B.....Dell Rapids
Eckrich, J. A.....Aberdeen
Engelson, C. J. .....Brookings
Ericksen, E. G.....Sioux Falls
Ericksen, O. C.....Sioux Falls
Ewald, P. P.....Lead
Farrell, W. D.....Aberdeen
Feige, C. A.....Canova
Fisk, R. R.....Flandreau
Fitzgibbon, Graton ...Sioux Falls
Fleeger, R. B.....Lead
Fletcher, R. H.....Britton
Flett, Chas. .....Milbank
Forsberg, C. W.....Sioux Falls
Freeburg, H. M.....Watertown
Freshour, Ina M. .....Yankton
Gage, E. E. .....Sioux Falls
Gelber, M. R. .....Aberdeen
Gerdes, O. H.....Eureka
Geyerman, P. T.....Hot Springs
Gifford, A. J.....Alexandria
Gillis, F. D.....Mitchell
Goldman, E. W. .....Madison
Greenfield, J. C.....Avon
Gregg, J. B.....Sioux Falls
Gregory, D. S.....Milbank
Griffith, W. H. .....Huron
Groebner, O. H.....Sioux Falls
Grosvenor, L. N.....Huron
Grove, A. F.....Dell Rapids
Grove, E. H.....Arlington
Hagin, J. C.....Miller
Hammond, M. J.....Watertown
Hannon, L. J.....Hartford
Hanson, H. F.....Vermilion
Hanson, O. L.....Valley Springs
Hare, Carlyle .....Spearfish
Hargens, C. W.....Rapid City
Harris, H. G.....Wilmot
Hart, B. M.....Onida
Haug, L. A.....Beresford
Havlicek, T. L.....Sanator
Hawkins, A. P.....Waubay
Hayes, Clara E.....N. Y. City
Hedemark, T. A.....Revillo
Heineman, A. A. .....Wasta
Hershkowitz, S. T.....Clear Lake
Hill, John F.....Yankton

Hill, Robert ..... Ipswich
Hogeboom, C. F..... Frederick
Hohf, J. A..... Yankton
Hohf, S. M. ..... Yankton
Hopkins, N. K..... Arlington
Howe, F. S..... Deadwood
Hummer, F. L..... Lead
Hummer, H. R..... Sioux Falls
Hyden, Andrew ..... Alcester
Hyden, Anton ..... Sioux Falls
Ince, H. J. T..... Rapid City
Jackson, A. S..... Lead
Jackson, E. B. ..... Aberdeen
Jackson, R. J..... Rapid City
Jamieson, G. V..... DeSmet
Jenkins, P. B. ..... Pierre
Jenkinson, H. E.... Wess. Springs
Jernstrom, R. E..... Rapid City
Johnson, A. E..... Watertown
Johnson, G. E. ..... Yankton
Jones, E. W..... Mitchell
Jones, T. D..... Bowdle
Jordan, A. A..... Highmore
Jordan, L. E..... Chester
Jorgenson, M. C. ..... Watertown
Joyce, E..... Hurley
Judge, W. T..... Milbank
Kalayjian, D. S. ..... Parker
Karlins, W. H..... Webster
Kauffman, E. J..... Marion
Keegan, Agnes..... Aberdeen
Kegaries, D. L..... Rapid City
Keeling, C. M..... Springfield
Kellar, S. A..... Sioux Falls
Keller, W. F..... Sioux Falls
Kelly, R. A..... Mitchell
Kenaston, H. R..... Bonesteel
Kenney, H. T..... Watertown
Kilgard, R. M..... Watertown
Kimball, O. A. ..... Murdo
King, Owen..... Aberdeen
Koren, F..... Watertown
Kraushaar, J. O. F. .... Aberdeen
Lamb-Barger, Hazel H.....
.....Sioux Falls
Lanam, M. O. ..... Sioux Falls
Landmann, G. A..... Scotland
Lein, Horace ..... Herried
Lemley, R. E. ..... Rapid City
Lendgren, C. V..... Estelline
Leonard, B. B..... Yankton
Lietzke, E. T..... Beresford
Lloyd, J. H. ..... Mitchell
Lockwood, J. H..... Henry
Lowe, C. E..... Mobridge
Lundquist, C. G..... Leola
McCarthy, P. V..... Aberdeen
McClellan, S. A..... Kennebec
McIntyre, P. S..... Bradley
McLaurin, A. A. ..... Pierre
Mabee, Don R..... Mitchell
Mabee, O. J..... Mitchell
Magee, W. G..... Watertown
Malloy, J. F..... Mitchell
Malster, R. M..... Carter
Martin, H. B..... Harrold
Mattlock, W. L..... Huron
Mattox, N. E..... Lead
Mayer, R. G..... Aberdeen
Maytum, W. J..... Alexandria
Meyer, W. L. ..... Centerville
Miller, Geo. H. ..... Spearfish
Miller, H. A..... Brookings
Miller, S. F. ..... Senator
Minty, Earl W..... Rapid City
Minty, F. W. ..... Rapid City
Moe, A. J..... Sioux Falls
Mokler, V. A..... Wentworth
Moore, F. A..... Yankton
Morehouse, E. M..... Yankton
Morrissey, M. M. ..... Pierre
Morsman, C. F..... Hot Springs
Mullen, R. W..... Sioux Falls
Murdy, B. C. ..... Aberdeen
Murdy, R. C. ..... Aberdeen
Murphey, T. W..... Bristol
Nessa, N. J..... Sioux Falls
Newby, H. D..... Rapid City
Nilsson, F. C. ..... Sioux Falls
Northrup, F. A..... Pierre
Ohlmacher, J. C. ..... Vermilion
Olson, C. L..... McIntosh
Opheim, O. V..... Sioux Falls
O'Toole, T. F... New Underwood
Overton, R. V..... Winner
Owen, N. T..... Rapid City
Pankow, L. J..... Sioux Falls
Parke, L. L..... Canton
Peabody, H. C..... Webster
Peabody, P. D..... Webster
Pearce, A. R..... Sioux Falls
Peeke, A. P..... Volga
Pemberton, M. O..... Deadwood
Perkins, E. L..... Sioux Falls
Pittenger, E. A..... Aberdeen
Porter, O. M..... Sisseton
Potter, G. W. ..... Redfield
Privett, L. B. ..... Geddes
Quinn, R. J..... Burke
Radusch, Frieda..... Rapid City
Ramsey, Guy..... Philip
Ranney, T. P..... Aberdeen
Reagan, R..... Sioux Falls
Rice, D. B..... Britton
Richards, G. H..... Watertown
Richards, F. A..... Sturgis
Richardson, W. E..... Philip
Rider, A. S..... Flandreau
Riggs, T. F..... Pierre
Robbins, C. E. ..... Pierre
Roberts, W. P..... Sioux Falls
Rohwer, R. T..... Mitchell
Rowe, A. N..... Brookings
Rozendal, P. H..... Lake Preston
Rudolph, E. A. ..... Aberdeen
Sackett, R. F..... Parker
Salladay, I. R..... Pierre
Sarchet, Geo. ..... Mobridge
Saxton, W. H..... Huron
Saylor, H. L..... Huron
Scallin, P. R..... Clark
Scanlon, D. L. ..... Volga
Scheib, A. P..... Hitchcock
Schmidt, I. H..... Faulkton
Sewell, H. D..... Huron
Sherrill, S. F..... Belle Fourche
Sherwood, C. E..... Madison
Sherwood, J. S..... Doland
Sherwood, H. W..... Doland
Smiley, J. C. ..... Deadwood
Smith, E. C..... Mission
Spirey, A. W..... Mobridge
Stansbury, E. M. ..... Vermillion
Stegeman, S. B..... Salem
Stenberg, E. S..... Sioux Falls
Stern, M. A..... Sioux Falls
Stevens, Geo. A..... Sioux Falls
Stevens, R. G..... Sioux Falls
Stewart, F. H..... Kimball
Stewart, J. L..... Nemo
Stewart, N. W..... Lead
Tarbell, H. A..... Watertown
Thomas, Benj. ..... Huron
Tillisch, Henrik..... Brookings
Tobin, F. J. ..... Mitchell
Tobin, L. W. ..... Mitchell
Torwick, E. E..... Volga
Torwick, E. T..... Volga
Townsend, L. J..... Belle Fourche
Threadgold, S. D... Belle Fourche
Trierweiler, J. E..... Yankton
Triolo, Antony ..... Philip
Tschetter, J. S..... Huron
Tschetter, Paul ..... Iroquois
Turner, J. F. ..... Miller
Van Demark, G. E... Sioux Falls
Vaughn, J. B..... Castlewood
Ver Meulen, Peter.... Sioux Falls
Volin, H. P..... Lenox
Vollmer, F. J. ..... Howard
Waldner, J. L..... Parkston
Walsh, J. M..... Rapid City
Walters, C. A..... Belle Fourche
Walters, S. J..... Winner
Walton, J. B..... Martin
Watson, E. S. ..... Estelline
Weishaar, C. H..... Aberdeen
Westaby, J. R..... Madison
Westaby, R. S..... Madison
White, W. E. ..... Ipswich
Whiteside, J. D..... Aberdeen
Whitson, G. E. ..... Madison
Wilkinson, E. A. ..... Hayti
Willhite, F. V..... Redfield
Wilson, F. D. ..... Winner
Wood, T. J..... Huron
Wright, O. R..... Huron
Young, E. M..... Mitchell
Zachritz, G. F..... Faulkton
Zarbaugh, G. F..... Deadwood
Zeiss, F..... Onida
Zimmerman, G. E.... Sioux Falls

PAPILLARY CARCINOMA CONFINED TO A DIVERTICULUM OF THE BLADDER—ITS REMOVAL AND FINAL REPORT

OSCAR OWRE, M.D., F.A.C.S.
MINNEAPOLIS, MINN.

ON FEBRUARY 8, 1928, the diagnostic findings in this case were reported to the Academy of Medicine as follows:

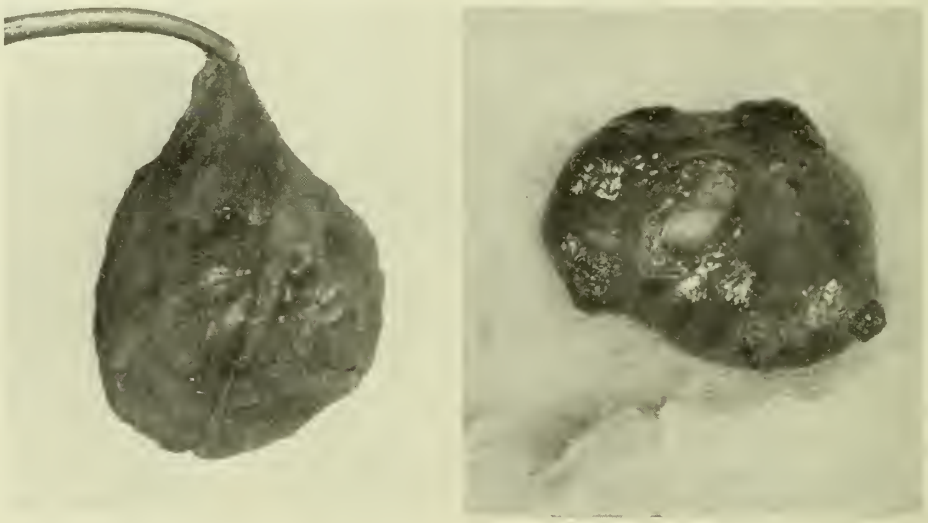
Male, 62 years of age, referred by Dr. Baker, February 8, for examination. Hematuria following exertion. The patient noticed blood in the urine two years ago. No vesicle distress and no pain on either side of back. Urination was not frequent, and the patient did not have to urinate at night. He noticed, however, that at times he could pass as much as a quart of urine. The prostate felt small on rectal examination. On passing the cystoscope, sixteen ounces of bloody, residual urine were removed. The bladder mucosa appeared non-inflammatory. The left ureter was normal and the contractions and spurts of urine indicated a hyperfunctionating kidney. The right looked less active. There was no enlargement of the prostate intravesically. Just back of the right ureter and on the lateral wall of the fundus could be seen the orifice of a diverticulum. Bloody fluid could be seen coming from the orifice. By further distention of the bladder and altering the position of the cystoscope, it was possible to see, just inside of the orifice, some foreign matter which was not stone, but had the appearance of tumor tissue. An indigo-carmine test showed a good color in one and one-half minutes from the left, and a fair color in eight minutes from the right ureteral opening. It is important to know that there is no communication between the ureter and the diverticulum (no blue color was seen coming from the orifice of the diverticulum); however, a shadow-casting catheter was passed to the kidney on the right side and another was coiled up in the diverticulum. An X-ray showed that they did not lie in contact with each other. The cystoscope was removed, leaving the bladder moderately distended. Two and one-half ounces of a 33⅓ per cent solution of sodium iodide were injected through the ureteral catheter into the diverticulum. Some of this will naturally escape into the distending medium of the bladder, but there will be a disparity in the density of concentration of the fluid in the diverticulum and bladder. (X-ray plates shown.) Here are two sacs almost of equal size with a defect in the filling of the diverticulum on the lower and lateral surface, demonstrating a tumor in the diverticulum and the source of the hematuria.

On February 25, 1928, the diverticulum was removed. Caudal anesthesia with ethylene was used. The usual midline incision used for most bladder operations was employed. The peritoneum was freed as far back as possible over the posterior surface of the bladder and the area occupied by the diverticulum. It was difficult to appreciate its exact size and to mobilize the diverticulum as desired, so after opening the bladder it was packed with a long strip of gauze; this facilitated the freeing of adhesions considerably.



X-ray shows shadow-casting catheter in ureter, and one coiled up in the diverticulum. Filling defects in diverticulum are readily seen.

The neck of the diverticulum was excised by a clean cut going quite wide. The cut edges were sutured from the outside by interrupted sutures placed through the several coats of the bladder avoiding the mucosa. A Penrose drain was placed down to the site of the stitches but not on it. A Penrose drain was placed in the space of Retzius. This patient had had diabetes for years, although at present there was no sugar in the urine, and fearing that the stitched area as well as the opening to the bladder might not heal as usual, a small drain was placed in the bladder suprapubically. The latter was removed at the end of the ninth day. Some sugar appeared in the urine and there



(A) Photographs of diverticular sac at the time of removal.

(B) Inverted.

was a little sloughing in the abdominal wound, but the patient made a splendid recovery and was discharged in twenty-four days, with complete healing of the wound. The microscopic report is as follows:

Sections show a papillary type of growth with occasional mitotic figures.

Diagnosis: Papillary carcinoma, Grade III.

This patient has been cystoscoped at regular intervals of six months since the operation. At one time a year and one-half from the time of operation a small granular, warty growth was seen near the scar marking the neck of the diverticulum. This was removed by the application of radium followed at the next cystoscopy by intensive dessication. He was seen for the last time on November 16, 1931. At that time there were two small growths on the edge of the suprapubic scar in the bladder. These were dessicated. At no time did he have more than a trace of blood in the urine and after the last cystoscopy he remained perfectly well, with no blood in the urine or symptoms referable to the genito-urinary tract. On January 25, 1932, he had a stroke followed by pneumonia from which he did not recover. No postmortem was obtained.

It is of interest to note that the recurrence of the growth in the bladder was not serious and was amendable to treatment. The diverticular growth was of an infiltrative type that had not as yet reached the outer wall of the sac.

A number of cases of neoplasm confined to a diverticulum of the bladder have been reported; nevertheless, it is so infrequently seen that it appeared to me to be of sufficient clinical interest to report the final outcome of this case.



Artist's sketch of inverted sac sketched at the time of removal. Notice patches of papillary carcinoma.

TRACHOMA

J. M. Walsh, M.D., F.A.C.S.
RAPID CITY, S. D.

TRACHOMA causes more blindness than any other eye disease.

A worker in the Public Health service, discussing Trachoma once said, "Nobody dies from it, nobody recovers from it and nobody knows anything about it."[1]

That is not quite correct. It seems to me we know altogether too much about this dreary ailment. The trouble is that our knowledge does not help us a great deal in preventing or curing it.

There has been a vast amount of hard, painstaking research and clinical work done on trachoma in the last 20 years. Where the results have not been all that was hoped, slowly and surely, the field has narrowed, and before long it is to be expected this problem will be solved.

Baer states, "Trachoma is one of those clinical syndromes of which little is definitely known, in which there is a wide division of beliefs among Biologists, Health Departments and Medical workers."[2]

Etiology

All races are subject to trachoma except the pure black. It seems to thrive best in hot, dry countries with wide exceptions, such as Southern China, India and our own mountain folk of Tennessee and Missouri. Brown and yellow people have almost a general racial infection. The Chinese showing a 25 per cent involvement and the Arabs and Egyptians even more.[3] The lack of ordinary cleanliness and sanitation accounts in part for this.

The North American Indian, where the tribe is infected with trachoma (and some are not), show about the same involvement as the Chinese, 25 per cent.

This disease is much more severe among the Nordic-whites in the United States than among the brown or yellow races. United States Public Health Department, in an analysis of 17,000 cases, mostly from Missouri, find four per cent (4%) blindness, rated industrially. All of this group were more or less under treatment. Among the North American Indians, Chinese and Japanese, where there is much less treatment, blindness is but one per cent. Time and lack of treatment have built up a greater resistance among certain groups.[3]

Etiological research has been mostly along the following lines: bacterial, virus, nutritional, allergy.

Bacterial: Noguchi states, "The inciting agent of trachoma occurs in trachomatous lesions, and is capable of being transmitted to certain species of animals." This has been debated at length. His claim, that bacterium Granulosum has a definite relationship to trachoma, has not been accepted by most opthalmologists. Olitsky and his associates are still investigating this organism in the Rockefeller Institute.[5]

Where trachoma has every evidence of being of bacterial origin, the picture is not quite complete. Accidental infection has occurred frequently. This has a definite incubation time, five to twelve days. Inoculation with emulsion of the whole follicle usually produces trachoma, with the same incubation period.

More than a single case in a family is almost the rule. Still monoccular types of trachoma are fairly common. Single cases in large families where no precaution, even of the simplest kind, is carried out, are seen almost daily. B. Granulosum has failed to produce typical trachoma in either monkey or man. Whole follicle inoculations in monkeys have usually produced the typical disease.

Where not definitely proved, there seems to be the most evidence that this ailment is of bacterial origin.

Is it possible that there are stages in trachoma, of very short duration, when it is transmittable? Or is some other factor necessary in the receiver? If so, why are whole follicle inoculations so often successful?

Virus: Nicolle reported that bacteriological filtrates of human trachoma would produce this disease. Other investigators have reported both for and against this finding. Olitsky and others have reported B. Granulosum to be filtratable under certain circumstances. Thygesen of Iowa City says, "Failure to produce trachoma in blind human eyes with any bacteria, including B. Granulosum of Noguchi, found upon trachomatous conjunctiva, has been recorded in previous reports."[4]

In support of his non-bacterial conclusions, Thygesen states that there is no proved bacterial cause. The inclusion bodies of Prowazek and Halberstaedter and the free bodies are gram-negative through their entire cycle, thus eliminating any gram-positive bacteria. That the gram-negative bacteria of the eye stain rapidly with aniline dyes, the free bodies stain only after a prolonged application.

Nutrition: Trachoma is much more prevalent among people with a fixed, limited diet. This limitation is not always the same. The desert people, as North American Indians, Arabians and

Egyptians lack green vegetables and fresh fruits. In India and China the lack is proteid and fats. The mountain folk of North America lack fruit. How much a lack of sanitary measures influences this apparent diet deficiency is hard to tell. They seem to exist in the same homes.

Again, trachoma is very prevalent among professional wrestlers. Diet plays no part here.

This subject has not been exhausted. Geographically, trachoma is so wide spread that a complete investigation along nutritional lines would be so extensive as to look impossible. This work will, and should be done. A careful and painstaking analysis might bring valuable results. However, nutritional abnormalities could not account for the direct transmission of the disease.

Experiments in Noguchi's laboratory and by Rice of the United States Public Health Service and S. Gifford have failed to prove the influence of improper diet.[6]

Allergy: Morris, in Experimental Biology and Medicine, 1932, found that various bacteria isolated from a trachomatous eye when dropped in the normal eye of a rabbit, produced a congestion of the conjunctiva, a clouding and vascularizing of the cornea, beginning at the limbus and spreading widely.[7]

Follicular conjunctivitis, an identical disease clinically, is self-limiting and free from pannus, hyperplasia of the conjunctiva, corneal cloudiness and ulcer. Is this due to the virus or bacteria, and how much does allergy have to do with it? Allergy may play a part in the pathology, but there is no evidence that it is a causative factor.

Pathology

Trachoma means roughness, and this is the essential early pathology. Before follicle formation is clearly developed the tarsal mucous membrane is thickened and covered with slight irregularities, due to the unequal development of the follicles. These follicles most often begin in the lower fornix, but quickly spread to the upper lid. Each follicle goes through a cycle of eruption, first a hard shotty nodule that slowly enlarges. With the hard tarsus as a background, the mechanical pathology comes rapidly to the fore. The normal sub-epithelial lymphoid structures seem to multiply almost indefinitely, and with this overgrowth and encroachment the surface epithelium changes in character and becomes thin, while the papillae project above the surface.

When the multiplication and overgrowth of the follicular tissue crowd the epithelium, the thin layer separates, and material escapes from the broken down follicle. Around these points granulations begin.[8] Inflammation soon appears in the tarsus and orbital conjunctiva. Now, there is a measurable thickening of the lids under the orbicularis. This makes more difficult work for this muscle and at once hypertrophy occurs, which, in turn, creates greater pressure on the eyeball.

The center of the mature follicles begin to soften and with the greater pressure from the thick tarsus and hypertrophied orbicularis, the top necroses and an open sloughing cavity results.

Now, secondary infection with the Koch-Weeks bacillus and many others found in the eye, dominates the picture. The orbital conjunctiva is much thickened, and new, fine blood vessels are seen on the corneal margin. Possibly, allergy begins here as there is a haziness of the cornea and edema of the occular conjunctiva that is difficult to explain otherwise. Mechanical pressure becomes still greater with the increase in size and number of the follicles and the edema. Abrasions may now occur in the corneal epithelium, due to the constant friction of the large and sometimes irregular follicles, and with the mixed infection, corneal ulcer results. Pannus, in the meantime, becomes definite, and the increasing number of blood vessels on the occular conjunctiva becomes hidden beneath the hyperplasia and edema.

This picture is vastly different from the early roughness. The important part of vision, the cornea is involved. No cornea that has had pannus, keratitis or corneal ulcer ever functions normally again. By this time or before, the follicles have spread into the fornix and on the occular conjunctiva and the caruncle.

From here on, the connective tissue, resulting from prolonged and severe inflammation, begins to take an important place in the pathology. Contraction, with a limiting of blood supply, is well under way. Much of the epithelium of the mucous membrane has been replaced by scar tissue. The follicles are fewer in number, and irregular white lines of scar become increasingly numerous, both on the tarsal and occular conjunctiva. The same process is going on in the tarsus, which is now becoming thinner and losing its regular shape. The orbicularis has not changed. The cornea is covered to a greater or lesser extent with a thin pannus, and, depending on the original involvement, with fine or thick scars, or both.

Distortion of the lids by continued tarsal contraction often brings about trichiases to further damage this now almost useless eye.

Microscopically, the follicles formed in the adenoid layers of the conjunctiva show general

inflammation, but nothing that is exclusive to trachoma.

The Prowazek-Halberstaedter inclusion bodies, after many years, have failed to prove the existence of this disease.[3]

Symptoms

The symptoms are those of inflammation and vary with the pathology. Stages of trachoma are hard to arrange definitely. One lapses into the other, or two or three are present at one time. The picture depends on the amount of damage done to the various structues. Corneal ulcer may be early, is usually well along in the disease, and may not happen at all. Follicles may persist from first to last. Scar may begin early or late. There are so-called quiet and active periods. The disease may seem arrested, only to flare up acutely with apparently no reason.

Direct inoculations are of the acute type. The ordinary infection is as slow as the development of the pathology. When the follicle is small and the tarsal conjunctiva merely hyperemic, the symptoms are those of a slightly irritated eye with a vague feeling of roughness. This may last from days to months.

As the follicle develops and the tarsus thickens, there is a definite feeling of roughness, as of a foreign body in the eye. There is profuse lachrymation and a mild photophobia.

With the necrosis of the top of the follicle and secondary infection, the eye becomes acutely inflamed. There is much superficial pain, profuse discharge and photophobia. With pannus and corneal involvement, there is deep pain added to the picture.

With scar formation comes a feeling of harsh grating dryness and trichiasis may develop further local irritation.

Diagnosis

Diagnosis presents no difficulty in a typical case where the disease is prevalent. Vernal, Parinauds, and particularly Follicular conjunctivitis, offer more or less difficulty where trachoma is uncommon.

In trachoma, the follicles are *in* the conjunctiva. They tend to become confluent. The conjunctiva is thickened, both tarsal and orbital, the last concealing the blood vessels. The tarsus is nearly always thickened. After some duration of the disease, streaks of scar tissue can be found on tarsal conjunctiva. Pannus always occurs. Trachoma is most often bilateral and gives no constitutional disturbance. It occurs at any age, and is more common in certain races.

Vernal conjunctivitis has seasonal periods of acuteness. Follicles seem to be *on* the conjunctiva and have cobblestone arrangement instead of confluent masses. No tarsal involvement or scar tissue.

Perinauds conjunctivitis is unilateral with swollen periauricular and sub-maxillary glands. There are constitutional disturbances with fever and a mild toxemia. The follicles are irregularly distributed on the conjunctiva.

Follicular conjunctivitis has follicles identical with trachoma. The tarsus is occasionally slightly thickened. There is no thickening of the orbital conjunctiva or concealing of the blood vessels. Conjunctival scars are not found. Pannus does not occur. It is a disease of the young, self limiting, and lacks the progressive severity of trachoma.

Treatment

A. B. Bear, in the Journal of the Missouri State Medical Association, after reviewing the endless drugs, chemicals and surgical procedures used in treating this disease said, "In treating trachoma we are not much further advanced than when we scrubbed the conjunctiva with a fig leaf."[2]

Sight conservation, of course, is the objective in treatment. The saving of time and money, as well as the comfort of the patient, must be considered.

There is no specific remedy for trachoma. The wide diversity of the treatment is due to the wide diversity of its pathology. There seems to be two trends in the treatment.

The Conservative: This group is the larger. Their plan is to remove the follicle either with destructive chemicals or mechanically, or both, and to treat the symptoms and complications as they arise. No attention is paid to the mechanical pathology.

The Radical: The first effort is directed toward the mechanical element. Tarsectomy and canthotomy are done early and the follicle is left for subsequent treatment.

Under the conservative treatment, once a diagnosis is made, the exact pathological condition present and the results hoped for in the treatment must be given full consideration. In the early follicular formation, destructive chemicals and drugs seem to be the usual treatment. Of such chemicals, copper sulphate is commonly the choice. Either the crystal itself is used by direct application, or a strong solution rubbed on with a cotton-wound applicator or a glass rod. Some use silver nitrate, two to five per cent, with an applicator the same way.

Recently chaulmoogra oil has been used. Foa of Rome[5] advises scrubbing with a cotton swab

dipped in this oil, until a pink blood stained fluid appears, and claims wonderful results by treating alternate days on an average of from eight to twelve weeks. Tiong of Manila[6], who pricks each follicle with a needle and follows it with vigorous scrubbing, claims the treatment a success. Dimitry[7], in the New Orleans Medical Journal, using chaulmoogra oil in the same way that Foa does, reports excellent results. With the exception of the above, most reports are unfavorable with this oil.

With follicles the only marked pathology, the treatment must be directed at the follicles in hopes of destroying them and thus terminating the disease. The best to be hoped for from the direct application of destructive drugs would be to destroy the tops of the large follicles and at the same time apply the drug to the denuded surface. Note that all use mechanical friction. The drug alone does little good. From the very nature of their formation, immature follicles must be deep in the conjunctival tissue. With caustic treatment on alternate days for weeks, the hope is to destroy each erupting follicle as it appears, thus preventing irritation of the eye ball. The massage method, or mechanical pressure with a crystal for a great length of time, is such that the sensitive epithelium of the conjunctiva cannot survive. Scar is bound to be added to the scar of the destroyed follicle. The fornix is difficult to treat completely with this method. Its inaccessability, its numerous folds and crevices would make complete direct application impossible. Of course the bulbar conjunctiva and caruncle are omitted in such treatment.

Oft times such treatment is impossible to the patient because of the time and expense while away from home. The pain and discomfort will frequently cause the patient to refuse treatment.

At the best, it is but a slow and painful way to create scar of the conjunctiva. The tarsal inflammation is uninfluenced. Such treatment being unsuccessful, as at times it is, the next step usually followed is grattage. This is another attempt to destroy the follicle mechanically and is usually followed by caustic applications. The immature follicle is untouched and greater scar results. Mechanical expression of all discoverable follicles, both on the tarsal and bulbar conjunctiva, as well as on the caruncle is widely used. If it were possible to do this completely, a cure would result so far as the formation of follicles is concerned. But again, the immature follicles would escape and as they continue to form and mature, the treatment would be well nigh endless. The result would still be conjunctival scar and irregular scar at that. In the meantime the tarsus would go through an inflammation followed by a scar with shrinkage and distortion. The already hyperthrophied orbicularis muscle would still have a hard, rough medium with which to traumatize the eye.

Radical: Tarsectomy, including the tarsal conjunctiva with a canthotomy, is early in order. This at once removes the tarsal follicles, the hard tarsus and does away with the effect of the pressure of the enlarged orbicularis. At once the mechanical element of the disease is removed. Scar is produced at one operation. Even if follicles reform on the lids, there is no rigid base to give extra pressure that makes them dangerous. They are now on a soft, yielding base and can do no harm.

It is questionable if trachoma is ever completely cured. It is possible, though not probable, that if each and every follicle, both mature and immature, could be found and destroyed before tarsal or orbital involvement had occurred, that the eye structures would return to normal. The production of slow scar by long application of caustics must effect the corneal epithelium.[12]

No matter how complete a cure may seem, recurrences happen in many cases, and if the mechanical pathology exists, the condition is the same as before treatment was begun.

Electricity, light and x-ray treatments are not in general use. Recently some work has been done with high frequency current. Fulguration of the follicles appears to have great possibilities. It is easy of control, causes little pain at the time or afterward and surely destroys the follicle. No doubt this treatment will become more popular.

Summary

1. Trachoma is a progressive inflammatory disease caused by an unidentified organism. Nutritional deficiency predisposes to this disease. Its pathology in certain phases is influenced by allergy.

2. The mechanical pathology is a major factor.

3. The corneal complications are the most destructive to eye function.

4. There is no specific treatment.

5. Corneal complications are more common in the conservative treatment because of the undisturbed mechanical pathology.

6. The radical tarsectomy with canthoplasty removes the mechanical pathology and prevents many of the destructive complications.[12]

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BOOK NOTICE

A PHYSICIAN'S LIFE IN A STATE ASYLUM

I Knew 3,000 Lunatics, by VICTOR ROBERT SMALL, M.D.; cloth, dust jacket, 273 pages. New York: Farrar & Rinehart, Inc.: 1935. Price, $2.50.

This volume, for all its lurid title and gaudy dust jacket, is a highly interesting document. VICTOR ROBERT SMALL, who was graduated from the Ohio State University College of Medicine in 1916, now practices obstetrics and gynecology in Clinton, North Carolina. But he spent six years of his life as staff physician in a state insane asylum in an unidentified region of the South.

"The mass of men," quoth THOREAU, "lead lives of quiet desperation." SMALL shows us that even as the saner people on the outside of the stone walls of the asylum, the inmates of the institution were subject to the same impulses, petty greeds, jealousies, frustrations, and disappointments which characterize the mass of men. The odd part of this volume is that SMALL's insane patients react to both ordinary and extraordinary stimuli much as do normal men and women.

SMALL has made use of the dramatic sense in writing, and the work is obviously colored for popular consumption. But it is nevertheless a highly interesting and valuable work on a socially-obscure subject.

A STANDARD WORK REWRITTEN

Diseases of the Skin, by RICHARD L. SUTTON, M.D., Sc.D., LL.D., and RICHARD L. SUTTON, JR., M.D.; heavy cloth, 9th edition, 1,433 pages, illustrated; Saint Louis, Missouri: The C. V. Mosby Company: 1935. Price, $12.50.

Doctors SUTTON and SUTTON have covered the field of skin diseases and syphilis very thoroughly, just as they have in their previous editions. To this volume have been added 28 new skin conditions which have been described in the very recent literature; and in addition, revisions of several topics have been made.

The book is excellently-written, and contains 1,310 photographs portraying practically every skin condition. The bibliographies are abundant and up-to-date. The authors' methods of therapy and their formulae of medicaments are emphasized; but there are also given the methods of other leading men in dermatology.

By indicating their choice of therapy, the authors give this volume an animate quality which makes the possessor of the volume feel that he has an omnipresent consultant at his elbow.

The author is professor of dermatology in the University of Kansas School of Medicine, and his son is associated in practice with him in Kansas City.

This volume of diseases of the skin is concise enough for the student, and complete enough for the general practitioner or specialist.

L. H. WINER, M.D.

CHRONICLE OF AN ABUNDANT LIFE

Fifty Years a Surgeon, by ROBERT T. MORRIS, M.D.; cloth, first edition, 347 pages, frontispiece; New York: E. P. Dutton & Company, Inc.: 1935. Price, $3.50.

DR. MORRIS, who is now 78, has written a piercingly alive book, crackling with dry Scotch humor and breaking forth with sly asides upon almost every page. It is ample testimony to the not-too-generally accepted fact that doctors can be—and very often are—very entertaining as literary workmen.

Particularly valuable are the notes on the earlier years of MORRIS' career: in the days before LISTER was heard of, when the American Medical Association had not yet taken its great steps in defining and regulating medical education, when hospitals were ruled with steely hand by the particular convictions of the chief visiting surgeon, and when the only real pathological laboratories in America were the ones of T. MITCHELL PRUDDEN at the New York College of Physicians and Surgeons, and WILLIAM WELCH at Bellevue Hospital and Medical College. When MORRIS began his career, histology, pathology, and bacteriology were considered "unnecessary" subjects. When he retired, they were accepted as indispensable, and new ones had taken their place—endocrinology, diet-accessory therapy, physiotherapy, psychiatry, etc.

The book is a fine addition to any surgeon's library. Not written down to the layman, it is fresh, sparkling, and has a charming touch of very human braggadocio throughout its 347 pages.

The
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THE 1935 MINNESOTA STATE MEETING

The 82nd Annual Meeting of the Minnesota State Medical Association, held in Minneapolis on June 24, 25 and 26, was in many respects the most successful of any in the history of the organization. The arrangements, the program, the scientific and commercial exhibits, the entertainment and the attendance all combined to make the occasion a noteworthy one which reflected great credit on the State organization and the co-operating local committees. The large number of visitors from neighboring States, especially Iowa, North and South Dakota and Montana was especially gratifying and all of them seemed to feel well repaid for the effort in coming.

There were many commercial exhibits and it is the revenue from this source that largely ensures the success of such a meeting as we had. The direct returns to the exhibitors are negligible, for few make any attempt to utilize the opportunity to make sales at the time. On the other hand we believe that much good is accomplished in bringing the salesmen and their products closer to the profession and as a gesture of good-will that should not be forgotten.

It was a big show and necessarily there was some overlapping; not difficult to understand, surely, when we remember that in an attendance of approximately three thousand there are many different tastes to be satisfied. On the whole, as we observed it, the audiences were well balanced in the various activities and there were no idle moments or lapses.

The Hobby Show was a new venture as far as the State Meeting is concerned and it attracted considerable attention and favorable comment. It was more than a mere "show," because it served to emphasize the value of cultivating a non-professional sideline as an escape from the stress and strain of one's work.

We go to Rochester for the annual meeting in 1936 and that it will be a success there is a foregone conclusion. G. C.

THE PHYSICIAN'S TABLE TOP

If we were asked what constituted the proper furnishings for the top of a physician's office desk, we would first say: "As little as possible." We would say this because patients are most impressionable creatures and every detail of the setting in a consultation is so important that nothing at all is far better than the gradually accumulated clutter of irrelevant knick-knacks so often seen where such amassing has not been studiously resisted.

As the floor covering is the first consideration of the interior decorator so the deskpad may well be regarded as our proper starting point. This should be of harmonizing or suitably contrasting colors and its blotter part watched and

replaced as it becomes worn or soiled. Next in order of comparable necessity comes a writing stand which may have some elements of ornamentation even though it be of the modern, practical fountain pen type. Four books should be within easy reach, one English and one medical dictionary, a well illustrated anatomy, and an up-to-date reference book on therapeutics. These need not in any wise detract from a table if placed in one corner between suitable bookends. The desk phone must be conceded a place. Beyond this we would not go except as working necessities demand. Writing paper, case histories and prescription blanks should be brought out only as required. Exposed books of accounts, checks and statements are not in good taste, and the appointment book should certainly not be open to public gaze. A. E. H.

OUR GREAT LOSS

In the death of Dr. Herman M. Johnson the medical profession of Minnesota and organized medicine in general has sustained much more of a bereavement that the mere passing of a valued colleague. He possessed almost unique qualifications for a type of service with which most of us are not only unfamiliar but are lacking in the ability to develop. He knew human nature and especially the workings of the average political mind and he was a keen judge of character. With this knowledge and ability to use it he wholeheartedly threw himself into the work of building up adequate legislation for the protection of high professional standards in Minnesota and watched with unceasing zeal to see that no effort to secure the enactment of improper legislation by the sectarians or the cultists was allowed to succeed. He was remarkably successful in this but only by great sacrifice of time, money, strength and personal advancement on his part. He was devoted to this cause and let nothing stand in its way and he did it so quietly and unostentatiously that many who indirectly reaped benefit from it did not know by whose hand it came about. He lived to see the fruition of many of his efforts but left us far sooner that he could be spared. Now that he is gone we realize as never before the value of his undertakings and the utter hopelessness of finding anyone who can take his place with equal competence, devotion and self-abnegation. G. C.

GRADUAL EQUIPMENT

The inventive genius of medical man has so contrived to increase the applicable working tools of our profession that there is danger of losing a sense of perspective in estimating their relative importance. Little do we wonder that the recently graduated physician is confused by the array from which he must choose his equipment.

Each generation has the advantage not only of strictly medical discoveries but also of instruments of precision in diagnosis and appliances for the treatment of disease that were denied to its predecessors. There is little to be gained by a knowledge of all this, however, unless, at the same time, it be available for the uses of the workmen.

In cities this problem is not so great because every such facility is usually afforded by the modern hospital. In the country it is different. With limited means and a smaller community in view, the locater must confine himself to the most essential necessities. Fundamentals come first. Radium, the electrocardiograph and X-ray can wait. Lack of the more expensive instruments may serve to sharpen the faculties of observation, palpation and percussion. Admiration was always felt for the teachers of Vienna who had the uncanny knack of making diagnoses in plain unfurnished rooms. Privation may prove itself a blessing in disguise. At any rate, first steps first. A. E. H.

SOCIETIES

To the Officers, Councilors and Members of the South Dakota Medical Association.

I am genuinely grateful for being able to serve you, as your secretary.

The officers, councilors, committee members and delegates have given of their time to study and present construction policies for the information and guidance of the association.

As councilor and delegate your responsibility, therefore, is representative and not individualistic. In arriving at a final decision, judgment should be based on facts and conditions as they are related to and affect the medical profession of our state and not as they concern personal opinion or interests.

A study of the varied problems of the profession will continue the prestige we have, and establish public confidence.

Your secretary earnestly recommends that the councilors and delegates convey to their respective district secretaries a full report of actions of this session.

There is also a great need of bringing to every doctor of medicine a knowledge of the policies and activities of the district society and state

association. This can be done by personal contact by the councilor, president and secretary of the district medical society.

Your secretary asks your continued co-operation.

J. F. D. Cook, M.D.
Secretary.

PROGRAM
of
NORTHERN MINNESOTA MEDICAL ASSOCIATION

Duluth, Minn.

Monday and Tuesday, August 12-13, 1935

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MONDAY, AUGUST 12

Morning

8:00- 9:00—Registration.
9:00- 9:20—"Fractures of Neck of Femur," M. S. Henderson, M.D., Rochester.
9:30- 9:50—"Pelvic Inflammatory Disease," John H. Moore, M.D., Grand Forks, N. D.
10:00-10:20—"X-ray Diagnosis in Kidney Conditions," L. R. Parson, M.D., Elbow Lake, Minn.
10:30-10:50—"Lung Abscess," E. N. Peterson, M.D., Eveleth, Minn.
11:00-11:20—"Fractures of the Humerus—Mobilization and Traction," B. I. Derauf, M.D., St. Paul.
11:30-11:50—"New Concepts of Calcium Therapy," Richard M. Johnson, M.D., Minneapolis.

Afternoon

12:00- 1:30—Luncheon.
1:30- 2:00—Business Meeting.
2:00- 2:20—"Radiotherapy for Inflammatory and Malignant Conditions," A. U. Desjardins, M.D., Rochester.
2:30- 2:50—"Fractures of the Ankle," Owen W. Parker, M.D., Ely, Minn.
3:00- 3:20—"Neuritis," J. C. McKinley, M.D., Minneapolis.
3:30- 3:50—"The Management of Diabetes Mellitus in General Surgery," Clarence Jacobson, M.D., Chisholm, Minn.
4:00- 4:20—"Sterility, Its Etiology and Treatment," James J. Swendson, M.D., St. Paul.
4:30- 4:50—"Report of the American Heart Association," R. L. Nelson, M.D., Duluth.

Evening

8:00- 8:20—"Treatment of Pneumonia by Artificial Pneumothorax," Edgar T. Herrmann. M.D., St. Paul.
8:30- 8:50—"Treatment of Acute Empyema," Herbert A. Carlson, M.D., Minneapolis.
9:00- 9:20—"The Management of Malignant Disease of the Mouth and Adjacent Structures," Gordon B. New, M.D., Rochester.
9:30-10:00—"Medical Economics," R. G. Leland, M.D., Director, Bureau of Medical Economics, Chicago.

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TUESDAY, AUGUST 13

Morning

9:00—Board steamer Noronic for trip up North Shore Lake Superior, returning at 2:00 P. M. Five-course dinner.

Tuesday program on boat with Dr. Preston Bradley, Pastor of People's Church, Chicago, and President of the National Isaac Walton League, as chief speaker.

Other speakers on this program will be:
Dr. W. R. Bagley, Duluth, President St. Louis County Medical Society.
Dr. G. I. Badeaux, Brainerd, President of Northern Minnesota Medical Association.
Dr. W. A. Coventry, Duluth, President of State Medical Association.
Dr. O'Leary, Superior, President of the Wisconsin State Medical Society.
Dr. R. G. Leland, Chicago.

G. I. Badeaux, M.D., *President*,
O. O. Larsen, M.D., *Secretary*.

THE 82nd ANNUAL MEETING OF THE MINNESOTA STATE MEDICAL ASSOCIATION

June 24, 25 and 26, 1935

Election of New Officers, 1935-1936

Dr. W. W. Will, Bertha, was elected president of the Minnesota State Medical Association by the House of Delegates at the election of June 25, during the 82nd meeting of the Association in the Minneapolis Civic Auditorium. The first vice-presidency was voted to Dr. E. G. McKeown, Pipestone, and the second vice-presidency to Dr. W. C. Rumtf, Faribault. The present secretary, Dr. E. A. Meyerding, Saint Paul, was re-elected, as was also the present treasurer, Dr. W. H. Condit, Minneapolis.

Three councillors were re-elected by the House of Delegates: Dr. H. Z. Griffin, Rochester (first district); D. L. L. Sogge, Windom (second district); and Dr. B. S. Adams, Hibbing (ninth district.) Dr. E. J. Simons, Ah-Gwah-Ching, Minn., was selected to fill the unexpired term of Dr. Will as councillor from the seventh district.

Dr. J. T. Christison, Saint Paul, will be one of the three delegates to the American Medical Association's meeting at Seattle in 1936, and his alternate will be Dr. E. A. Meyerding, Saint Paul.

The new officers of the Minnesota State Medical Association are herewith presented:

President, W. W. Will, M.D., Bertha.

First Vice-president, E. G. McKeown, M.D., Pipestone.

Second Vice-president, W. C. Rumtf, M.D., Faribault.

Secretary, E. A. Meyerding, M.D., St. Paul.

Treasurer, W. H. Condit, M.D., Minneapolis.

Councillors

First District, H. Z. Griffin, M.D., Rochester.
Second District, L. L. Sogge, M.D., Windom.
Third District, H. M. Workman, M.D., Tracy.
Fourth District, J. S. Holbrook, M.D., Mankato.
Fifth District, G. A. Earl, M.D., St. Paul.
Sixth District, James H. Hayes, M.D., Minneapolis.

Seventh District, E. J. Simons, M.D., Ah-Gwah-Ching.
Eighth District, W. L. Burnap, M.D., Fergus Falls.
Ninth District, B. S. Adams, M.D., Hibbing.

House of Delegates, American Medical Association

H. M. Johnson, M.D., Dawson.
W. F. Braasch, M.D., Rochester.
J. T. Christison, M.D., St. Paul.

Alternates

G. A. Earl, M.D., St. Paul.
W. L. Burnap, M.D., Fergus Falls.
E. A. Meyerding, M.D., St. Paul.

Auxiliary

The Auxiliary of the Minnesota State Medical Association met at the Hotel Leamington on June 25, and inducted Mrs. F. J. Elias, Duluth, into the presidency. Mrs. Elias was chosen as president-elect at the 1934 meeting, and assumed office at the June 25 meeting. Mrs. E. M. Hammes, Saint Paul, was selected as the 1935 president-elect, and will take office in 1936. The first vice-president is Mrs. J. R. Norman, Crookston; second vice-president, Mrs. W. D. Roberts, Minneapolis; treasurer, Mrs. R. J. Josewski, Stillwater; recording secretary, Mrs. A. C. Baker, Fergus Falls; and auditor, Mrs. Leo Dungay, of Northfield.

Members of the Auxiliary also heard a discussion upon medical economics by Dr. W. A. O'Brien, professor of pathology in the University of Minnesota Medical School, and Dr. William Braasch, Rochester, in the Minneapolis Woman's Club.

The discussion of socialized medicine has become pretty much one-sided, declared Dr. Braasch, as he urged members of the Auxiliary to study the entire question from the viewpoints of both practitioner and layman.

AT THE CONVENTION HALL

Monday

On Monday morning, June 24, almost 1,400 physicians and visitors associated with medicine registered at the booth in the end of the Civic Auditorium, pre-convention registration having been completed Sunday in the Hotel Leamington, where the Council and the House of Delegates also held pre-convention assemblies.

At 8 a. m. on Monday, physicians who attended the three clinics offered by the University of Minnesota Medical School heard Dr. Hobart A. Reimann, chief of the medical service of University Hospital, declare: "By examining a large number of statistics, the range of temperature for normal persons was found to extend from 97 degrees to about 100 degrees. Therefore, in the average group of persons there will be found some whose temperature is normally at a level usually considered to be fever." Dr. Reimann's topic was *Diseases Characterized by Prolonged Fever*. Others who participated in the University clinic were Dr. A. V. Stoesser, who spoke on *Allergy in Children*, and Dr. W. T. Peyton, who lectured on *Some Surgical Problems*.

At 9:30 a. m. on Monday, Dr. Adolph M. Hanson, of Faribault, gave his report, *Biological Effects of Thymus and Pineal Extracts*, assisted by Drs. L. G. Rountree, J. H. Clark, and Arthur Steinberg, Ph.D., of Philadelphia, who had carried on previous research at the Philadelphia Institute for Medical Research. This exhibit and report, which was accompanied by a cinema, was awarded the silver medal of the American Medical Association at the Atlantic City session this year.

At 11:00 a. m. on Monday, Dr. Leo Rigler, of the University of Minnesota, spoke on *X-Ray Diagnosis of Carcinoma*, while Drs. Donald C. Balfour and Waltman Walters, of Rochester, discussed *Treatment*.

Dr. Harry L. Alexander, associate professor of medicine in the Washington University School of Medicine, spoke on *The Present Status of Clinical Allergy* at 1:00 p. m. Monday, declaring that nearly 12,000,000 persons in the United States today are affected by some form of allergy. He denied that sensitivity to a particular protein can be inherited, saying that an individual's tendency to sensitivity to an allergen may be transmitted.

Dr. Frank H. Lahey, Boston, spoke upon *Some of the Newer Developments in Hyperthyroidism and Hyperparathyroidism*, at 3 p. m. on Monday, being presented by the Minneapolis Surgical Society; and at 4 p. m. Dr. Edmund Andrews, professor of surgery in the University of Chicago, spoke upon *The Pathogenesis of Gall-Bladder Disease*, saying that gall-bladder diseases appear to be caused not by germ infections, but by high concentrations and accumulations of bile salts within the gall-bladder.

Dr. William Parry Murphy, instructor in medicine in the Harvard Medical School and winner (with Drs. Minot and Whipple) of the 1934 Nobel prize in medicine, delivered an address on Monday night at 8:15 p. m. in the Cyrus Northrop Memorial Auditorium on the University of Minnesota campus, sponsored by the Hennepin County Medical Society. Karl T. Compton, Ph.D., president of the American Association for the Advancement of Science, and Dr. W. A. Coven-

try, president of the Minnesota State Medical Association, presided at this address.

On Monday, too, a report was given to the American Association for the Advancement of Science by Fred Conrad Koch, A.M., Ph.D., professor of physiological chemistry in the University of Chicago, who presented the results of hormone assays made recently at the University of Chicago laboratories.

Bound water, which is described as that water which is part of the living cells of the human body and other organisms, was elaborated upon by Ross A. Gortner, B.S., Ph.D., professor and chief of the division of agricultural biochemistry at the University of Minnesota, who announced that in studies made upon winter wheat, a pressure equal to 350 times that of the atmosphere would be required to extract the bound water from the grain.

The Minnesota Public Health Association sponsored Dr. M. H. Nathanson, assistant professor of medicine in the University of Minnesota Medical School, who demonstrated two methods by means of which cardiac standstill can be achieved: one, by certain pressures near the carotid artery, and the other, by injecting adrenalin. Quinidine, which is eight times as powerful as quinine, was recommended by Dr. Nathanson as a preventive against sudden death after an attack of coronary thrombosis.

Tuesday

On Tuesday morning at 8:00 a. m., Dr. Theodore L. Squier, associate clinical professor of medicine in the Marquette University Medical School, lectured on *The Role of Drug Allergy in the Etiology of Primary Granulocytopenia.*

Dr. Squier was sponsored by the American Association for the Advancement of Science, as was also Dr. W. A. Bloedorn, professor of medicine in the George Washington University at Washington, D. C., who followed Dr. Squier with the subject, *The Role of Iron in the Treatment of Anemia.*

"Babies born to anemic mothers," Dr. Bloedorn remarked, "will be anemic because insufficient iron is stored in their livers before birth. This anemia cannot be relieved, either, without prescribing iron in large amounts to build up the necessary reserve."

Dr. William Parry Murphy, of the Harvard Medical School, concluded this morning symposium on diseases of the blood by discussing briefly: *What We Have Learned About Pernicious Anemia During 10 Years of Treatment by Liver.*

At 11:00 on Tuesday morning, the physicians heard Dr. L. W. Sauer, associate in pediatrics at the Northwestern University Medical School, speak on *The Prevention of Whooping Cough With Bacillus Pertussis Vaccine,* saying among other things, that a vaccine for pertussis grown on a medium enriched with blood fresh defibrinated could be called effective "beyond reasonable doubt," as indicated by a series of tests conducted in the Northwestern Universitty laboratories. The bacillus in question is the *B. pertusoir.* Dr. Sauer was sponsored by the Northwest Pediatrics Society, and his paper was discussed by Dr. Irvine McQuarrie, of the University of Minnesota, and Dr. O. W. Rowe, of Duluth.

Dr. Percy Brown, of Boston, Massachusetts, former president of the American Roentgen Ray Society, and gold medallist of the Radiological Society of North America, was sponsored by the Minnesota Radiological Society, and delivered the annual Russell D. Carman Memorial Lecture in the Civic Auditorium at 1:00 p. m. on Tuesday. His subject was: *The Inception and Development of Fluoroscopy; The Influence of Carman on Its Status in America.*

Dr. Elmer L. Sevringhaus, Madison, Wis., associate professor of medicine in the University of Wisconsin Medical School, spoke on *Endocrine Therapy* at 3.00 p. m. on Tuesday, followed by Dr. E. D. Plass, professor and head of the department of obstetrics and gynecology in the University of Iowa. Dr. Plass discussed: *The Simplification of Obstetric Care.*

The annual joint banquet of the Minnesota State Medical Association and the Women's Auxiliary was held at 6:00 p. m. Tuesday at the Hotel Leamington, with the Hennepin County Medical Society and Auxiliary as hosts.

Tuesday evening, many physicians and members of the American Association for the Advancement of Science heard Dr. Richard P. Strong, professor of tropical medicine in the Harvard Medical School, speak on tropical diseases. Dr. Strong delivered his address in the Cyrus Northrop Memorial Auditorium, and stressed the point that if the Federal government were so intent upon spending huge sums in many general fields, it might well expend a few thousand dollars in the campaign against malaria.

An interesting paper was presented Tuesday at the farm campus of the University of Minnesota. Byron H. Thomas, B.S., Ph.D., professor of animal husbandry at Iowa State College, Ames, Iowa, and Clauson Young Cannon, M.S., Ph.D., professor of dairy husbandry at Iowa State College, experimented with six goats by depriving

them of vitamin E over a period of one year. Results of their experiment indicated that the goats did not suffer from a lack of this diet accessory.

Wednesday

On Wednesday morning at 8:00 the Mayo Clinic presented its clinic on: *Dysentery: Its Medical and Surgical Management,* under the direction of Drs. T. B. Magath, H. M. Weber, J. A. Bargen, and C. F. Dixon.

At 11:00 a. m. came the presentation of Dr. Thomas G. Orr, professor of surgery in the University of Kansas School of Medicine, who spoke upon: *Venoclysis: A Consideration of Its Possible Dangers.*

The meeting then adjourned until 1:00 p. m., when Dr. John F. Barnhill, of Indiana, professor of surgery of the head and neck in the University of Indiana School of Medicine, discussed: *Suppurations of the Neck: Cause, Diagnosis and Treatment.* As an interesting sidelight, Dr. Barnhill pointed out that George Washington actually died because of involvements coming from the presence of a pus sac in his neck, rather than from the diphtheria, quinsy, or inflammation of the larynx, which are usually adduced as the cause of his death.

Dr. W. S. Middleton, Madison, Wis., professor of medicine in the University of Wisconsin School of Medicine, offered his paper: *The Prognosis and Treatment of Coronary Occlusion* at 3:00 p. m. Tuesday, and was followed by the Medical Question Court at 4:00 p. m., with Dr. William A. O'Brien, of the University of Minnesota Medical School, as chairman.

Thus the eighty-second state meeting of the Minnesota State Medical Association came to an end; but the American Association for the Advancement of Science continued its meeting in Minneapolis, the last one taking place on Friday morning, June 28, in the Botany Building at the University of Minnesota.

The Rochester Meeting

On Thursday morning, June 27, many Minnesota physicians and members of the American Association for the Advancement of Science traveled to Rochester, where the Minnesota State Medical Association held a joint session with the scientific association in Plummer Hall, Mayo Clinic and Foundation Building. After the gathering had been welcomed by Dr. William J. Mayo, a paper was presented by Edward C. Kendall, A.M., Ph.D., Sc.D., chief of the section of chemistry of the Mayo Clinic. Professor Kendall spoke on: *The Investigation of the Hormone of the Supra-Renal Cortex,* an endocrine product which Professor Kendall himself isolated several years ago.

Dr. A. R. Barnes, of the Mayo Clinic, discussed: *Coronary Disease,* and Dr. F. C. Mann spoke on: *A Review of Recent Work on Blood Flow.* Dr. J. D. Pemberton, of the Mayo Foundation, presented a work on: *Results of Surgery of the Thyroid Gland;* Dr. L. W. Newburgh, of the University of Michigan School of Medicine, spoke on: *Quantitative Aspects of the Insensible Loss of Weight;* and Dr. E. L. Sevringhaus, of the University of Wisconsin Medical School, concluded this series with his address: *The Use of Pituitary Extract in Patients with Hypo-Gonadism.*

Exhibit Winners at the Meeting

Dr. Adolph M. Hanson, Faribault, was awarded the gold medal of the Minnesota State Medical Association for his exhibit illustrating the biological effects upon rats of injections of thymus and pineal extracts. This was the same exhibit which won the silver medal (Class 1) of the American Medical Association at Atlantic City in June.

Dr. R. G. Green, of the University of Minnesota Medical School, was given honorable mention for his exhibit showing the incidence and occurrence of tularemia in man and animals.

Dr. S. A. Weisman, assistant professor of medicine in the University of Minnesota Medical School, was given honorable mention for his exhibit of normal and abnormal chest models, showing the development of the human chest from birth to the adult state. He used charts and diagrams to show the chest models in cross-section, and to explain the deviations in the thoracic indices.

The General Exhibits

A valuable exhibit was sponsored by the Committee on Deafness Prevention and Amelioration of the Minnesota State Medical Association under the guidance of Dr. Horace Newhart, of Minneapolis. Dr. Newhart demonstrated how the degree of hearing is checked in public school children, what steps are taken to ameliorate hearing loss, once it has been detected, and how many people with approaching deafness can be aided if diagnosis is made in time.

The Mayo Clinic displayed a large exhibit, showing the differential diagnosis of asthma (Dr. L. E. Prickman), experimental studies on the diaphragm of the dog (Drs. W. S. Lemon, A. S. Graham, and G. M. Higgins, Ph.D.), fever therapy (Drs. A. U. Desjardins and W. C. Popp), and non-tropical sprue (idiopathic sprue). (Drs.

A. M. Snell, J. F. Weir, J. D. Camp, C. H. Watkins, and Mildred Adams, Ph.D.).

The Minnesota State Department of Education, division of rehabilitation, sponsored a booth showing the work of the division in the rehabilitation of crippled persons within the state. This work is under the direction of Mr. Thomas Minehan, former member of the teaching staff of the University of Minnesota, and author of the widely-discussed book, *Boy and Girl Tramps of America*, which was published last year.

Another exhibit by the state government was that of the State Department of Conservation, incorporating the Division of Forestry, Division of Game and Fish, and the Minnesota Tourist Bureau. The exhibits were in charge of Miss Marion Gold, former assistant to the city editor of *The Minnesota Daily*, at the University of Minnesota, and now a staff member of *The Minnesota Conservationist*, publication of the Department of Conservation.

Dr. M. E. Knapp, Minneapolis, exhibited the treatment of fractures, and the treatment of erysipelas with ultra-violet, using patients for his demonstrations.

Dr. Arthur F. Bratrud, Minneapolis, presented a clinic in which his technic of the injection treatment of hernia was explained, using actual injection of a patient.

The Glen Lake Sanatorium offered a fine exhibit of both tuberculosis of the ear and mouth, under the direction of Drs. S. S. Cohen, F. L. Jennings, W. L. Wilson, D.D.S., and J. C. Bryant, D.D.S. These exhibits consisted of wax models, beautifully executed as to detail and life-like precision.

The American Medical Association sent its exhibit on physical therapy, involving almost every feasible treatment concerned with or made possible by physical therapy. This exhibit was under the direction of Mr. Howard A. Carter, of Chicago and Dr. M. E. Knapp, of Minneapolis. It was well attended throughout the meeting.

Other exhibits which displayed considerable investigation and labor were those of Dr. Paul F. Dwan, Minneapolis, dealing with the cardio-amplifier and heart sound tracings; of Dr. Erling S. Platou, Minneapolis, dealing with the prevention and treatment of childhood infectious disease; and of Dr. Vernon L. Hart, Minneapolis, dealing with diseases of the hip joint.

The Hobby Show

The hobbies of Minnesota physicians displayed the fact that many doctors are skilled in many lines of art aside from the sciences of healing. Notable was the collection of rare old medical works of Dr. Gilbert Cottam, of Minneapolis; and the collection of several thousand publications for violin and piano of Dr. Virgil J. Schwartz, of Minneapolis. Emmett O. Swanson, D.D.S., Minneapolis dentist who has won nearly every medal in marksmanship worth holding in the world, sent a complete exhibit of both guns and medals, and his work was amplified by two Minneapolis sharpshooters, Dr. F. A. Olson and Dr. P. C. Ware, whose targets and firearms were likewise displayed. The hobby show ranged from etchings and photography to anthropological prizes and trout flies.

PROCEEDINGS OF THE MINNEAPOLIS CLINICAL CLUB REGULAR MEETING, APRIL 11, 1935

President Erling W. Hansen in the Chair

(*Continued from July 1 Issue*)

Amebic Dysentery

Amebic dysentery is caused by the infestation of the endameba histolytica. There are six different species of the ameba, but the endameba histolytica is the only one considered pathogenic to man. It is impossible to outline a definite syndrome in this disease because the symptoms and findings are so bizarre. The patient may have symptoms referrable to the intestinal tract, such as pain in the right upper quadrant of the abdomen, bleeding from the rectum, diarrhea, periods of diarrhea followed by constipation, and occasionally merely abdominal discomfort. The diagnosis is usually dependent on the finding of the endameba histolytica in the stools, occasionally, however, the sigmoidoscopic and roentgenographic studies are so typical that a diagnosis of amebiasis can be made and proved by therapeutic tests, regardless of the fact that the stool examinations are negative for the presence of the ameba. Theoretically, the endameba histolytica should be found first but the condition of the patient may be such that the delay caused by obtaining further laboratory tests may result disastrously for the patient, therefore, on the strength of typical findings by a trained proctologist or roentgenologist, a therapeutic test may be instituted at once to prevent further progress of the disease. I have seen a number of cases of severe diarrhea in which the laboratory tests and the X-ray examinations were negative for amebiasis, but in which proctoscopy revealed the typical ulceration of this disease and smears taken directly from the ulcers showed numerous typical endameba histolytica. In some of these cases a previous diagnosis had been made involving one of several intestinal disorders such as carcinoma, chronic ulcerative colitis, hemorrhoids or diarrhea of an undetermined etiology.

A patient may be only a carrier of the disease having no demonstrable pathological changes, or the

disease may be confined only to the cecum or some other segment of the bowel. In such cases the diagnosis is difficult and it may be necessary to make use of every known test for amebiasis before reaching a satisfactory conclusion.

The changes caused by the infestation usually start in the cecum. Other portions of the intestinal tract most often involved in order of their frequency are: The ascending colon, the rectum, the sigmoid and the appendix. The ameba bury themselves in the mucosa and undermine it. The lesions thus produced involve only the mucosa, as a rule, but in the severer cases the entire bowel may become gangrenous.

The sigmoidoscopic findings may be very typical. About 33⅓ per cent of the cases of amebic dysentery can be diagnosed definitely by this method. The ulcers are usually discrete and vary in size from 1 m.m. to 3 or more centimeters in diameter. The mucosa between the ulcers is normal in appearance. The ulcers appear predominately on the Valves of Houston and the prominent folds of the intestine. They present a punched-out, umbilicated appearance, having undermined edges and are usually covered with a grayish white exudate. Usually this exudate can be easily wiped off with a cotton swab, but occasionally it may be found to be very tenacious and in this respect it may resemble the exudate found on the tuberculous ulcers. In the latter, however, active tuberculosis can usually be readily demonstrated elsewhere in the body. Occasionally the ulcers may be so large and confluent that most of the distinguishing characteristics are lost. The differentiation between chronic ulcerative colitis and amebic dysentery is very distinct. The ulcers in chronic ulcerative colitis, as stated previously, are pin-point in size and thus differ materially from the amebic ulcer which is usually much larger. Generally the entire surface of the mucosa is involved in chronic ulcerative colitis, whereas in an amebic infestation normal mucosa is found between the ulcerations. The lumen of the bowel is often contracted and the Valves of Houston disappear in chronic ulcerative colitis, while neither of these changes are characteristic of the amebic infestation.

Bacillary Dysentery

The dysentery caused by the bacillary bacilli is characterized by a sudden, severe onset of diarrhea and tenesmus accompanied by vomiting and fever, which is variable in its severity. In the more extreme cases of this disease the tenesmus and constant bowel movements are so severe that they often result in a prolapse of the bowel and in anal excoriations. Prompt examinations of stools for the Shiga and the Flexner bacilli are very important in determining the diagnosis because these bacteria tend to disappear from stools soon after the onset of symptoms. It is easy to demonstrate these bacilli if smears are taken directly from the ulcers within the first few days after the onset of the disease.

The sigmoidoscopic examination made in the early stages of the disease will reveal a generalized proctitis similar to that seen in the early stages of chronic ulcerative colitis. In a few days, especially in the severer types, one may observe large irregular ulcers which are usually at right angles to the long axis of the bowel. The ulcers are caused by a necorsis of the superficial layers of the mucosa and this may extend to the muscularis mucosa. In the less severe cases, where discrete ulcers are seen, it will be observed that the mucosa between the ulcers also is inflammed and may bleed readily. Occasionally the ulcers persist for some time after all symptoms of the disease have disappeared.

The disease in some respects resembles a chronic ulcerative colitis because at the onset the intensity is greatest in the rectum and sigmoid and then progresses upward toward the right colon and on rare occasions it involves the small bowel. The diagnosis usually depends upon finding the Shiga or the Flexner bacilli in the stools and also upon agglutination tests, which are of a distinct value, this is especially true in young children who have no previous history of diarrhea. The sigmoidoscopic examination is a very important aid in the differential diagnosis because in a very short time after the onset of the disease the ulcerations are usually found to be different than those observed in diseases causing similar symptoms. This diesase is severer in the very young and in the debilitated patients.

Tuberculosis

Tuberculosis may produce an ulcerative colitis, particularly in the terminal stages of the disease. Tuberculosis of the intestinal tract, either of the hyperplastic or the ulcerated type, has been known to exist for centuries and was mentioned by Hippocrates. In the ulcerated type the diagnosis is frequently made by sigmoidoscopic examination. The ulcers, high in the colon, are usually large and crater-like, having undermined edges, being irregular in shape and frequently having their largest dimension at right angles to the long axis of the bowel. Gradually the ulcers may encircle the bowel and thus produce an annular constriction. These ulcers, as a rule, start in the lymphoid tissue and are, therefore, deep and "come to a head" similar to a boil. Upon sigmoidoscopic examination the ulcers in the lower sigmoid and the rectum often have an oval or circular appearance with undermined edges and they are usually covered with an exudate. These ulcers may be confused with the large ulcers caused by the endameba histolytica, however, the differentiation usually can be made by the tenacity of the exudate which, in the case of the tuberculous ulcer, is more difficult to remove. Usually, active tuberculosis is present elsewhere in the body of the patient suffering from a tuberculous colitis.

Syphilis

In former years almost any lesion of the gastro-intestinal tract was considered luetic. This was especially true if the patient showed any signs of the disease or even if he were suspected of having it. Today, however, with our knowledge of differential diagnosis, we have found that syphilitic lesions of the gastro-intestinal tract are very rare. The disease mani-

fests itself either as a primary lesion of the ano-rectal structure or as a lesion occurring in the course of a systemic syphilis. Syphilitic ulcers usually follow the lymphatics or the blood vessels, and are, therefore, in the long axis of the bowel, and because of their location, a tubular constriction results, after healing has taken place. Some cases have been reported as showing a diffuse proctitis and others as revealing extensive sloughing ulcers with stricture formation.

Balantidum Coli

Colitis caused by the Balantidum coli is very seldom encountered in this country. A few cases have been reported in the United States and Canada but the majority of the cases reported have occurred in foreign countries. Balantidum coli is commonly found in the hog's intestinal canal. The cysts formed in the hog's intestine, if ingested by a human being, may produce a chronic diarrhea and other systemic manifestations. These cysts also may be transferred from one human being to another. The Balantidum coli usually infest the caecum and from thence they migrate to attack any other portion of the large bowel. This organism produces lesions, according to Craig, which are so similar to those produced by the endameba histolytica that it is impossible to differentiate between them. The ulcers are discrete and undermined and produce about the same manifestations as those amebiasis.

Non-Specific Ulcers

The non-specific ulcers, due to mercuric chloride and the other mercury preparations, may be dispensed with in this discussion by merely mentioning that these ulcers usually only involve the superficial mucosa and are very rare. After a careful history has been taken they seldom offer any difficulty in making a diagnosis by proctoscopy.

Factitial Proctitis

This condition was first described by Drs. Buie and Malgrem. They described it as a pathologic phenomena sometimes found in the walls of the rectum following the extra rectal application of radium or a combination of radium and roentgen ray in the treatment of lesions involving the pelvic structures other than the rectum. "Factitial proctitis is characterized by pathologic changes in one or more walls of the rectum, usually the anterior wall, and in the region of the second valve." The rectal symptoms appear only after a lapse of time, generally several months, following radiation. However, some patients may complain of symptoms a week or so after radium treatment. The longest interval reported by these authors was six years. The first symptom, as a rule, is bleeding from the rectum. This bleeding may be very slight or it may be very profuse. The next symptom noticed was urgency and frequency of stool. If the rectal symptoms are present and further radiation is necessary, these symptoms will become more pronounced after a short time following the additional radium treatment, but will gradually subside, provided that the carcinomatous lesion has been controlled by radiation. Pain is present in some of these cases.

The sigmoidoscopic picture varies in some respects, but in every case there is one characteristic, namely, talengiectasis. An ulcer may or may not be present, sometimes only a mild proctitis can be observed, but newly-formed vessels or talengiectasis are always noted. If an ulcer is present, it is fairly constant in appearance and location, and it is usually solitary. The lesion is usually oval or irregularly oval, and, as a rule, it involves all of the coats of the wall of the rectum. It is usually somewhat fixed due to its adherence to structures surrounding it.

It may be of interest to mention that many of these factitial lesions are mistaken for metastatic carcinomas or extensions of the original carcinomas. It is, therefore, essential that, when rectal symptoms develop following radiation of structures in close proximity to the rectum, a careful sigmoidoscopic examination should be made in all cases.

Self-Inflicted Traumatic Ulcer

A few cases have been reported of self-inflicted traumatic ulcers induced by hysterical patients. In one case recently reported by Brown and Brunsting, the patient had applied Lewis lye to the anterior rectal wall. "Proctoscopy disclosed ulcerative proctitis of the anterior rectal wall, the ulcerated portion had a gray base and a sharply defined bleeding margin." These cases are always difficult to diagnosis as the ulcers may persist and resist all forms of treatment until their true etiology is revealed.

Carcinoma

Carcinomatous ulcers of the rectum, rectosigmoid and sigmoid are usually solitary, and for this reason any singular ulcer in the lower bowel should arouse the physician to regard it as a carcinoma until it has been proven otherwise. The lesions are so characteristic that when once seen they are seldom forgotten. If a physician feels a mass or an indurated ulcer in the rectum he should not rely entirely on his sense of touch to arrive at a diagnosis. Most physicians are familiar with the typical "cauliflower feel" of a carcinoma. Occasionally, however, this may be an inflammatory growth. Some months ago I examined a patient who was scheduled for surgery in a few days for a carcinoma of the rectum. The mass did feel exactly like that of a carcinoma, but upon sigmoidoscopic examination, it was found to be an inflammatory growth due to amebiasis. Specific treatment for amebiasis resulted in the disappearance of the mass in a very few days.

When a physician is consulted by a patient with symptoms of any bowel irregularity such as increasing constipation, constipation followed by short periods of diarrhea, continual diarrhea or the passage of blood from the rectum, he should immediately have sigmoidoscopic and roentgenographic studies made before making a definite diagnosis.

Too often the physician prescribes medication for the constipation or the diarrhea and suppositories for the hemorrhoids without first ascertaining the real cause of the trouble. The delay caused by such treatment, together with the patient's usual procrastination

(because he is attempting to treat himself at home with the various widely advertised nostrums) often results disastrously. Sixty-five per cent of the carcinomas of the lower bowel are inoperable and generally one of the above reasons accounts for this high percentage. Carcinoma of the lower bowel is slow to metastisize and it is usually slow to show any symptoms, and because of this it behooves every physician to give every patient with any of the above symptoms a careful examination as soon as consulted. Only by careful and conscientious examination and early diagnosis can we hope to obtain the best results from our present-day methods of treating this dreaded disease.

Conclusion

This discussion has been confined largely to the sigmoidoscopic findings in ulcerative conditions of the large bowel. The conclusions drawn from such a study may be summed up as follows: While a carefully taken history is of the utmost value in arriving at a correct diagnosis in some diseases, its essential value in ulcerative diseases of the colon lies only in ascertaining the type of incapacity experienced by the patient and a clue to the probable location of the disease.

The greatest aid in the differential diagnosis of these intestinal diseases is obtained by direct examination of the ulcers through the sigmoidoscope. It is, therefore, evident that the prompt and conscientious use of the sigmoidoscope in diagnosing any intestinal irregularity would greatly expedite the treatment and insure better results.

Discussion

Dr. J. K. Anderson: I very much enjoyed Dr. Christianson's exhaustive discussion of this subject. I agree with him in all he said, with one exception. You know that there is some controversy relative to the causative factor of ulcerative colitis. The proctologic group in this country has not wholly accepted Dr. Bargen's conclusions, because many cases are proven to have this organism that do not have colitis.

I think Dr. Christianson's paper is very excellent. He covered all the conditions of ulceration in the large bowel and certainly covered and described them very well. I wish he had given us something on the treatment of the ulcerative type of colitis. In regard to this, we feel that even if we do not find the organism in amebic dysentery, we start them immediately on Emetine and many times these cases which we thought were ulcerative and not amebic, clear up very rapidly.

I do not think it is a closed subject, particularly in reference to the Bargen organism.

Dr. E. S. Platou: One subject which interested me very much in Dr. Christianson's excellent discussion was bacillary dysentery. It is probable that this disease is much more common among children than is ordinarily thought. A recent survey by Dr. George Lyon, Huntington, W. Va., showed that from 15 to 30 per cent of children had bacillary dysentery. In treating diarrhea before the end of the fifty years of life, I think we are prone to wait too long before making a positive bacteriologic diagnosis. Early, strict asepsis in the home care of diarrheas will, of course, prevent a great deal of spread of this potentially serious disease.

Dr. H. B. Sweetser, Jr.: The remark was made at the Minnesota Pathological Society that some four per cent, between three and five per cent, of the people in the United States suffered with amebic dysentery. I listened to one of the men from Rochester. We figured that out—this is a city of 485,000 people, and that would mean that there are 18,000 people in the city of Minneapolis suffering with amebic dysentery. That sounds like a very big figure to me. I just cannot imagine 18,000 people in Minneapolis suffering with amebic dysentery. I cannot believe that figure is right. If it is true, the amebic dysentery must be much less important than we think it is. I wonder if you can tell us more about it.

Dr. Elmer Rusten: I would like to ask Dr. Christianson if there is any reason why the factitial proctisis comes on as late as it does following irradiation.

Dr. H. W. Christianson: I want to thank Dr. Anderson for his kind remarks. In regard to the discussion of the true etiology of chronic ulcerated colitis, I would like to state that this theory has not been accepted by everyone, although it has been accepted by a large number of workers in this field. The point brought up by those whose opinions differ from those of Dr. Bargen and his associates is practically the same as that mentioned by Dr. Anderson, that is, that the diplostreptococcus has been found in the stools of normal people. It has been demonstrated that the diphtheria bacilli has been found in the throats of persons without diphtheria. This fact, however, does not prove that the diphtheria bacilli does not cause diphtheria.

Dr. Bargen has done a lot of experimental work in connection with this condition. He has injected the diplostreptococci, taken from the ulcers in the colon of patients suffering from chronic ulcerative colitis, and has injected them into experimental animals. The ulcers thus produced in these animals were similar to those found in the patients from whom the germs were obtained. He has also been able to isolate the diplostreptococci from these lesions. The results of the treatment of chronic ulcerative colitis has improved remarkably since the vaccine and the serum treatment has been instituted. Dr. Bargen and his associates have not changed the treatment much in other respects from that used previously, therefore, the improved results obtained can undoubtedly be attributed to the serum and the vaccine treatment.

There seems to be a missing link in the treatment of chronic ulcerative colitis because in about 25 per cent of the cases the treatment is not entirely satisfactory nor does one get the striking results in the other 75 per cent which are usually obtained in other diseases treated with a specific serum. These poor results may be attributed to the fact that chronic ulcerative colitis is a chronic disease much like tuberculosis, and because chronic ulcerative colitis is a sys-

temic disease, there may be other factors entering into the treatment which we have not yet discovered. The etiology and treatment of chronic ulcerative colitis has not been definitely settled, but I believe that Dr. Bargen is on the right track.

Another point in the discussion of the etiology of chronic ulcerative colitis is that some believe that bacillary dysentery has some connection with this condition. This has been quite conclusively proved by Dr. Bargen and his workers not to be the case, as the agglutination tests and the experimental work in following out these cases of true bacillary dysentery has shown that the dysentery bacilli plays no part in the etiology of chronic ulcerative colitis. I have seen a number of patients with true bacillary dysentery—three of them being in Minneapolis. The proctoscopic picture observed at the beginning of the disease is very much like that seen in chronic ulcerative colitis, but in a few days the large ulcers appear, which are very different from the ulcers seen in chronic ulcerative colitis. It is very seldom one observes any large ulcers in chronic ulcerative colitis. The onset of the disease is sudden and characterized by severe diarrhea, accompanied by a fever of variable degree—in chronic ulcerative colitis the symptoms at the beginning of the disease are usually slight.

I think we should be on our toes to watch for bacillary dysentery, especially in young children, as it is prevalent in this part of the country. There was one case of bacillary dysentery in Minneapolis occurring in a baby only a few days old. The mother had the bacillary dysentery just before delivery. Many times bacillary and amebic dysentery are superimposed. This is especially true in the far East, where both are very common.

In regard to the percentage of the total population in this country afflicted with the amebic dysentery, I believe the percentage mentioned by Dr. Sweetser is altogether too high. This percentage was given before the last epidemic and, though not correct, it has been repeatedly mentioned since. I am quite sure that one-half of one per cent would perhaps still be a high figure for the percentage of the total population afflicted with the amebic dysentery.

In regard to the delayed effects of irradiation, I am unable to answer this further than the explanation given by Dr. Exley. Some of these cases showed no symptoms for many years. The important thing to remember about the treatment of these cases of factitial proctitis is that by simple cleansing treatment most of these cases get well. There is no specific treatment and it takes a long time for this ulcerated condition to heal—usually a period of months.

THE TREATMENT OF FALL HAY FEVER

Inaugural Thesis—Minneapolis Clinical Club

Dr. H. B. Sweetser, Jr.

Summary

The treatment of fall hay fever has been guided by two divergent lines of thought; one that treatment with ragweed extract alone is sufficient to protect in 90 per cent of cases, the other that fall hay fever is one manifestation of a hypersensitive nature and treatment must include all the factors involved in each separate case.

In a study of 68 cases from the University Out-Patient Department, and private patients, 30 were victims of other allergic disturbances—asthma, hives, migraine, etc. Sixty-seven of the 68 were sensitive to ragweed, but 64 were sensitive to other pollens beside ragweed. Twenty-seven were sensitive to foods or animal danders, and did not obtain relief until these were found and eliminated. Of the results over several years, the best that was done with ragweed alone was to obtain 63 per cent relief, whereas this number as increased to 87 per cent when the other pollens were added or foods were found and eliminated, or animal danders were removed from the patient's environment.

Therefore, the stand is maintained that fall hay fever is not a problem of ragweed alone, but a manifestation of an allergic constitution and that proper results from treatment will be obtained only when this is appreciated and followed.

Dr. Elmer Rusten: I appreciate Dr. Sweetser's excellent presentation. The use of all pollens which are present in the air, even though in low concentration, gives the best results in treatment of seasonal hay fever. However, one must not neglect secondary inhalant causes and foods, which may cause symptoms during season. These secondary factors are present in a large percentage of seasonal hay fever patients; in some, so important that even if all primary inhalant atopens are used in desensitization, the patient continues to have symptoms when these additional causative agents are not taken into consideration. The actual technic of injection is quite important. It is advisable to use a tourniquet proximal to the site of injection of the pollen extract, thereby inhibiting rapid absorption and to prevent immediate severe systemic reactions. Occasionally, when giving hay fever treatment, one encounters symptoms of nitritoid crisis. These are impressive, but seldom fatal if epinephrin is given immediately and in adequate dosage.

Dr. E. D. Anderson: Do you get better results in the treatment of hay fever when the pollen vaccine is given in the seasonal method, or when it is given the year around?

Dr. R. L. Wilder: I would like to ask if the extracts that are used to desensitize give better results if the extracts are made up and tested for each individual patient.

Dr. O. J. Campbell: I would like to ask whether any of the drug firms have divided the country and put out vaccines according to the pollens that are prevalent in certain districts.

Dr. A. E. Cardle: I should like to ask whether or not treatment is persisted on when the patient shows a marked sensitiveness to a very small dose. Also, whether the use of a tourniquet and adrenalin in connection with the vaccine is advisable in sensitive patients.

Dr. H. B. Sweetser, Jr.: I rather purposely left out a lot of details of treatment, my basis being the comparison of treatment with ragweed alone compared with the treatment of fall hay fever, with the elimination of foods that patients are sensitive to, dusts and animals. We try to make the point that fall hay fever is one of the allergic manifestations of a constitution rather than a disease by itself.

In reference to the pre-seasonal treatment and the perennial treatment, if you could get the patient to come back, the time spent is worth while and the results are rather definitely better with perennial treatment than with the pre-seasonal treatment. In the pre-seasonal treatment you treat them rather in a leisurely fashion with more success, all the time taking into consideration the pollen producing seasons.

As to the individual extracts, I think the habit of the commercial houses in putting out fifteen separate doses of definite combinations is a most pernicious practice. Dr. Cardle's question about the sensitiveness to the first dose is a good illustration. My practice is to have a separate extract of each one of the pollens in three or four dilutions. We can get the pollen extract at the University and it costs ever so much less than at the drug houses. They are buying the dried pollen and making up the extract. You can test the patient for the different pollens and get a mixture made of all the pollens to which the patient is sensitive. If you will write the University they will send you the proper preparation. They will send it to you in three dilutions, one containing $\frac{1}{10}$, $\frac{1}{100}$ and $\frac{1}{1000}$, and you can start the patient with the dose that seems reasonable from your previous experience with particular patients, or you can inject into the patient's skin 0.01 c.c. of the weakest solution. If no reaction occurs, you can inject 0.01 c.c. of the next stronger dilution, and if that gives a marked reaction, the thing to do is to start with 0.1 c.c. of the next weaker solution.

Dr. A. E. Cardle: Suppose you get to the fourth or fifth dose and the patient has a reaction?

Dr. H. B. Sweetser, Jr.: I would certainly continue the treatment, but the next dose should be one-half as strong as the previous dosage.

Dr. Campbell asked if the drug houses divide the country up into sections. They certainly do. They say ragweed causes 90 per cent of the hay fever in this region. That is not true. This year one of their detail men called their attention to Dr. Ellis' work and sent it down East. This year they have a dilution of ragweed and Sager-Wormwood combined. The best way is to write a prescription for the things that the patient is sensitive to and send it to the University, or have it made up specially by one of two or three of the drug manufacturers doing really good pollen work.

As to Dr. Wilder's question, we get a stock dosage for the desensitization, and would get better desensitization if we could get varying strengths of the extract, test each individual patient with the extract and arrive at a material more suited to the patient.

Jas. K. Anderson, *Secretary.*

NEWS ITEMS

Dr. H. S. Sanford, Rochester, was recently married to Miss Katherine Brown, of St. Paul.

Dr. L. D. Peck, Hastings, Minn., is the new president of the Dakota County Medical Society.

Dr. W. H. Valentine celebrated his 35th anniversary of medical practice at Tracy, Minn., last month.

Dr. L. J. Bowman and family, of Enderlin, N. D., have returned from a month's vacation in California.

Dr. E. M. Howg has returned to Lennox, S. D., after an absence of several years, and opened offices for general practice.

Dr. W. W. Will, of Bertha, was elected president of the Minnesota State Medical Society at the annual meeting of the association in Minneapolis.

Dr. Gilbert J. Thomas, Minneapolis, was elected president of the American Urological Association at its annual meeting held at San Francisco last month.

Dr. W. B. Richards, St. Cloud, was the guest speaker at the June meeting of the Stearns-Benton Medical Society, his topic being "Colic in Children."

Dr. Chas. A. Swenson, one of the pioneer physicians of Braham, Minn., passed away on June 27, at his home after a lingering illness of several years.

The funeral services of Dr. C. E. Gates, well known Anoka physician, was held on June 27. Dr. Gates was a graduate of the University of Minnesota in 1904.

Dr. Carl J. Lind, Jr., Minneapolis, will spend several months in Europe in study at various medical schools. Dr. Lind is a University of Minnesota graduate of 1933.

Dr. William A. O'Brien, associate professor of pathology and preventive medicine at the University of Minnesota, is taking a few weeks vacation in New Mexico and California.

Dr. Henry S. Plummer, of Rochester, received the honorary degree of doctor of science from Northwestern University, Evanston, Ill., at the seventy-seventh annual commencement.

Dr. Halbert L. Dunn, director of the University of Minnesota Hospital, will leave the university to become chief statistician in the division of vital statistics in the department of commerce at Washington.

Dr. Richard F. Sitar, one of the younger physicians of Minneapolis, passed away after a short illness on June 27, at the age of 37 years. Dr. Sitar was a graduate of the Northwestern University Medical School.

Dr. F. J. Savage, St. Paul, was elected president of the Great Northern Surgeons Association at the annual convention at Glacier Park, Mont., July 1. Dr. R. C. Webb, Minneapolis, was re-elected secretary-treasurer. The 1936 meeting will be held in St. Paul.

Dr. Edward J. Engberg, St. Paul, secretary of the State Board of Medical Examiners for many years, was appointed a member of the State Board of Health by Gov. Olson. He succeeds Dr. Helen H. Hielscher, of Mankato, who died recently, and will serve until January, 1938.

Dr. William W. Andrus, one of the pioneer physicians of Montana, died at his Miles City home last month, which brought deep grief to a large circle of friends in all sections of the state. Dr. Andrus was mayor of his home city for ten years, and for 35 years served as a surgeon for the Northern Pacific Railway.

The new officers elected at the annual meeting of the Montana Medical Association, held at Helena on July 2, are: Dr. L. H. Flingman, Helena, president; Dr. John Everet, Glendive, president-elect; Dr. Harry McGregor, Great Falls, vice-president, and Dr. E. G. Balsam, Billings, re-elected secretary-treasurer.

Dr. Harold S. Diehl, director of the Students' Health Service at the University of Minnesota, will become dean of medical sciences on September 1, 1935, succeeding Dean Scammon. Dr. Diehl, who was a Red Cross medical director in Poland during the World War, received his degree in medicine from the University of Minnesota, and has been director of the health service since 1921. He is nationally known for his work in student health projects.

Richard Everingham Scammon, A.B., A.M., Ph.D., dean of medical sciences at the University of Minnesota since 1931, has been elevated by the Board of Regents of the University to the post of distinguished service professor in the medical school. The office is one of the few such professorships in the United States. Dean Scammon, a former president of the Minnesota Board of Examiners in Basic Sciences, is nationally known for his work in medical statistics, and the medical biology library at the University, built up largely through his efforts, is recognized everywhere as outstanding.

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New Series

Poisonous Animals and Their Poisons, With Special Reference to Snakes, Spiders and Insects

Hiram E. Essex, Ph.D.*
Rochester, Minn.

IN THE United States a physician is not often called upon to treat the results of bites or stings of poisonous animals. However, more complete knowledge of the nature of the actions of animal poisons and the most reliable method of counteracting them should be of considerable value when such cases present themselves for consideration. In spite of the fact that investigators have repeatedly reported the finding that potassium permanganate is not only without value but is of less value than no treatment at all when used in cases of snake bite, textbooks still recommend it as an antidote for such poisons. The busy physician cannot be expected to investigate for himself the merits of the multitudinous remedies that are recommended for the long list of ills he is required to treat. He must of necessity rely on what is considered efficacious by specialists in the various branches of medical investigation. Few subjects contain more misinformation than exists concerning poisonous animals and the action of their poisons. This is partly the result of the failure of investigators to make the results of their researches more accessible to the medical profession and to the general public. In the hope that the results of our studies and those of others on the physiologic action of animal venoms may prove of interest and value to the physicians of the Northwest, the present paper is submitted.

As Physalix has shown, poisonous species are not limited to a few animal groups but are found in nearly every major division of the animal kingdom, from the lowest to the highest. Under "poisonous animals" might be included a long list of forms, such as parasites that elaborate toxic products which are injurious to their hosts, blood-sucking leeches that introduce with their bite a salivary secretion which prevents the clotting of blood, beetles that produce blisters when crushed or brought in close contact with the human skin, mosquitoes whose bite raises the well-known welt, and many others which with justice could be labeled as poisonous. However, the animals that are more commonly considered poisonous are those that possess specialized glands and a more or less highly developed mechanism for introducing their venomous secretions into other animals. Among the invertebrates the species most respected for their ability to inflict injury are the centipedes, scorpions, spiders, bees, wasps and hornets. Among the vertebrates many poisonous species are found. The fishes can boast of the stinging ray; the reptiles may point with pride to the longest list of the most deadly species among all created things. The mammals, not to be wholly eclipsed in this regard, might bask in the reflected glory of Ornithorynchus, one of the most primitive mammals, which possesses a poison gland and a spine for injecting its secretion.

An attempt will not be made to summarize all available information on the poisonous American animals and their poisons. Discussion will be confined to a consideration of part of the knowl-

*Division of Experimental Medicine, The Mayo Clinic.

edge available on the venom of certain poisonous snakes, and of the scorpion, the tarantula, the black widow spider, and the honeybee.

Poisonous Snakes

The venom of the rattlesnake has been investigated from many points of view and by a considerable number of workers. Outstanding contributions have been made by S. Weir Mitchell, Mitchell and Reichert, and by Rogers. A few years ago Dr. Markowitz, Dr. Mann and I became interested in the nature of the action of the venom of the rattlesnake, Crotalus horridus and C. atrox, and our interest was stimulated to study other animal venoms in a similar manner. This work has continued to the present time. For convenience, the word "crotalin" has been used to designate the venom of the rattlesnake.

Symptoms and Postmortem Observations—The symptoms following intravenous injections of crotalin into dogs are: Repeated vomiting, defecation, urination, and marked collapse. The most striking feature noted in a dog that has succumbed to rattlesnake venom is the presence of multiple, diffuse and punctate hemorrhages in practically every tissue of the body. Gross hemorrhage into the lumen of the small and large intestine and blood-stained urine are invariably found if death has not occurred too rapidly. A similar postmortem picture is seen in the case of the rabbit that has died from the effects of crotalin poisoning. In the guinea pig the symptoms differ from those in the dog, since an injection of crotalin into this animal produces symptoms indistinguishable from those of anaphylaxis or injections of histamine. At necropsy, the most marked feature is emphysema of the lungs, and it is comparable to that seen in guinea pigs that have died from anaphylactic shock or injections of histamine.

Blood Pressure—It has been demonstrated by numerous investigators that the venom of the rattlesnake, when injected into animals, produces a profound fall in blood pressure. We have given considerable attention to the mechanism by which this is accomplished. Some workers have maintained that the fall in blood pressure is due to the action of the venom on the central nervous system; others have held that it is due to failure of the heart, and still others have held to the theory that intravascular thrombosis is the cause of the lowered blood pressure. We have shown that the depressor response occurs following the injection of venom into a decapitate preparation, which should not occur if the action were central. That the action of the venom is not primarily cardiac is demonstrated by the fact that an equivalent amount of venom does not impair the ability of the heart to expel blood in a heart-lung perfusion against a resistance of 105 mm. of mercury. The fall in blood pressure is not due to intravascular thrombosis, since the characteristic fall occurs in a heparinized animal and in one in which the blood has been previously defibrinated. By elimination, therefore, the fall in blood pressure is peripheral in nature. Plethysmography of the splanchnic viscera, liver, spleen, kidneys and intestines shows that, accompanying the fall in blood pressure, there is a decided decrease in the volume of these organs, and that after a variable lapse of time they expand markedly, which is in agreement with the postmortem appearance of extreme congestion and hemorrhage in these organs. The hind limb invariably expands during the active fall in blood pressure. This property of rattlesnake venom in producing a profound fall in blood pressure is strikingly similar to the results following injection of a suitable antigen for a sensitized dog or a suitable dose of histamine.

Since plethysmography indicated a marked decrease in the volume of all the visceral organs studied, and an increase in the volume of the hind limb, it was suspected that the blood pressure of a visceral organism would show a rise following an injection of crotalin. Consequently, we made such a preparation after the technic of Carrell. In brief it consists of removing the heart, lungs, liver, kidneys and intestinal tract and keeping them functioning when isolated from the rest of the body. As was suspected, intravenous injection of crotalin caused a marked initial rise in blood pressure, which indicates that during the decrease in volume of the visceral organs of the intact animal the blood is diverted to the somatic tissues, but that in the absence of the somatic tissues the contraction of the viscera causes a rise in blood pressure. The peripheral nature of the action of the venom is again indicated.

Blood—Since hemolysis was an invariable accompaniment of venom poisoning, we next studied its effect on the blood in vivo and in vitro. If a sublethal dose of crotalin is injected intravenously into a dog, and samples of blood are removed before and after the injection and centrifuged, a remarkable increase in the ratio of corpuscles to plasma is found in the specimen taken soon after the injection of the venom. Whereas in a 15 c.c. tube of blood the ratio of corpuscles to plasma is 7 to 8, the ratio a few minutes after the injection may be 10 of corpuscles to 5 of plasma. The same change in the ratio of corpuscles to plasma is demonstrable when equivalent quantities of venom are added to heparinized blood in a test tube. When a suspension of red cells in heparin-

ized plasma is viewed microscopically, it can be seen that, following the addition of a trace of venom to the mixture, the red cells rapidly expand and become spherical.

In our original experiments, the change in the ratio of corpuscles to plasma in vivo was considered to be due to the increase in the volume of the red cells. More recent experiments have cast doubt on this being the whole story. Other factors, such as contraction of the spleen and loss of fluid from the circulation, may likewise play a role in the process. However, the increase in the volume of red cells which occurs in vitro is difficult to account for on any other basis. In the absence of plasma, or after the corpuscles are washed and suspended in normal saline solution, the addition of venom is followed neither by hemolysis nor by an increase in the ratio of corpuscles to supernatant fluid after centrifuging. However, the addition of plasma results in an increase in the volume of the red cells; that is, plasma or serum is necessary for this reaction.

On the basis of these data we have concluded that hemolysis from rattlesnake venom is due to expansion of the red cells, with accompanying injury to their membrane. The effect of crotalin on the corpuscles of the dog is analogous to the reported effect of saponin on the red cells of human beings.

Isolated Organs—The influence of a dilute solution of rattlesnake venom on various perfused organs was studied. In addition to the heart-lung preparation, among other isolated organs we observed the influence of the venom on the isolated heart of the rabbit and the perfused uterus of the guinea pig. When venom is added to the perfusing fluid of a rabbit's heart, the contractile power of the heart is rapidly abolished and the heart becomes edematous within a period of about twenty minutes or less, depending on the dose. The perfused uterus of the guinea pig reacts to crotalin by maximal contraction. The reaction to snake venom differs from the anaphylactic response of this organ in one particular: Desensitization requires repeated doses of the venom. When the uterus finally fails to react to crotalin, histamine still evokes a maximal response.

Similarity to Anaphylaxis and Histamine—In addition to the striking similarity of anaphylactic shock and crotalin poisoning already alluded to, a brief sumary of the outstanding similarities may prove of interest. The administration of antigen to a suitably sensitized dog is followed by a sudden fall in blood pressure, accompanied by vasoconstriction of the spleen, kidney, and intestine (Biedl and Kraus, 1909, and Pearce and Eisenbrey, 1910). This fall in blood pressure is neither central nor cardiac but is peripheral in nature. The postmortem picture in the dog is not unlike that already described for crotalin. In both types of death the blood may remain incoagulable. The injection of crotalin into a pithed and artificially ventilated guinea pig, the movements of the lungs of which are being registered on a smoked drum, is followed by evidence of bronchiolar constriction; this is occlusive in about a third of the cases, so that the lungs are rigid in spite of considerable increase in the inflation pressure. The intradermal injection of crotalin is followed by a wheal surrounded by a flare, the reaction being practically identical with a similar inoculation of antigen into a sensitive person. And finally, as in anaphylaxis, there is a constant rise in pressure within the bladder of the dog following the administration of crotalin.

Those familiar with the action of histamine will also appreciate that crotalin produces all the physiologic responses usually considered characteristic of the action of that amine. However, Best and McHenry were unable to obtain appreciable quantities of histamine from the venom of the timber rattlesnake, Crotalus horridus.

Immunity—Before attacking the various phases of the problem of the physiologic mechanism of immunity, a logical requirement would seem to be comparatively complete knowledge of the physiologic behavior of a given antigen. This requirement is seldom fulfilled. We can give no physiologic explanation for the cause of death in many diseases and infections. The reason for this is apparent when one considers the multiplicity of problems involved in such investigations. If bacteria are concerned, the pathogenicity of a given strain may vary greatly, and with strains of equal virulence the susceptibility of the host is always an uncertain factor. This, with the varying length of time required for the manifestations of symptoms, increases the difficulty of obtaining decisive information on the physiologic processes involved. During our investigation of the physiologic properties of rattlesnake venom we were struck with its unique possibilities as an antigen in a study of immunity.

The venom of the rattlesnake is particularly suited as an antigen because of the multiplicity of its measurable reactions. As has been shown, when injected into dogs or added to their blood in vitro, this venom causes the red cells to swell. Advantage has been taken of this fact in developing a technic for assaying the anti-hemolytic titer of rattlesnake antivenin. The immunity of a given animal is measured in terms of the least quantity

of crotalin necessary to cause a 10 per cent increase in the volume of the red cells under standard conditions. This method is simple and rapid and obviates the use of pigeons in assaying the antibody content of a given blood. By the use of this method a study has been made of the development of immunity to crotalin in dogs and rabbits. Dogs being immunized for the first time develop antibodies very slowly; when the injections of venom are discontinued, their demonstrable immunity completely disappears in about ninety days. However, when injections are begun *again,* antibodies develop in the dogs that were *previously immune* at a far more rapid rate and to a much higher degree than in *control* dogs being immunized for the first time. This is in agreement with similar results obtained by other workers who used horse serum and typhoid bacilli as antigens.

A study was made of the red cells of immune dogs to determine whether they possessed resistance to crotalin or were protected entirely by the antibody in the plasma. It has been shown by transferring washed red cells of an immune dog to plasma of a non-immune dog, and vice versa, that the corpuscles of an immune dog are as vulnerable as those of a non-immune dog. These cells are protected solely by the antibody content of the plasma.

By a comparison of the immunity of the dog, as measured by the antihemolytic titer and by the reaction of the blood pressure in response to a standard dose of crotalin, it has been shown that a reasonably close correspondence exists. The blood pressure of immune dogs with high titers is practically unaffected, whereas dogs with low titers show a very decided depressor response to the standard dose of venom. Passive immunity was conferred on dogs by injections of immune rabbit plasma and commercial antivenin. Both were effective in preventing the usual vasodepressor reaction of the blood pressure of normal dogs following injections of crotalin. It would appear that the recovery of the blood pressure which follows the injection of antivenin into a crotalinized animal is due to the natural compensatory mechanisms that can manifest themselves when further injury is prevented.

To determine whether cellular immunity to crotalin exists, a study was made of perfused hearts of immune rabbits. Such hearts were incapacitated just as rapidly as hearts from non-immune rabbits, which indicates that cellular immunity is lacking in the tissues of the heart, and probably the same is true of the musculature as a whole.

Effect on Swine—There has long been a belief among farmers that pigs are immune to the action of snake venom. In fact there is an old saying, "You can't poison a hog." Farmers will tell you that rattlesnakes will not remain near hogs, that the hogs will kill the snakes and eat them. This part of the story may be correct, but it seemed improbable that swine could be immune to rattlesnake venom. A few experiments were sufficient to indicate that a pig is just as susceptible to crotalin given intravenously as a dog. It is very probable that the thick layer of subcutaneous fat that well-fed pigs possess prevents rapid absorption of the venom.

I should state at this point that our experiments with the venom of the water moccasin have shown its action to be identical with that of rattlesnake venom. However, the immunity to rattlesnake venom possessed by a dog does not protect it against the action of the venom of the water moccasin.

Treatment—The present discussion should not be closed without a few remarks on the best method of treating a person who has been bitten by a rattlesnake or moccasin.

If the bite has been received in one of the extremities, a tourniquet should be tied between the wound and the body in order to prevent too rapid return of the blood to the heart. This tourniquet should be released one minute in every ten.

If antivenin can be obtained, the contents of one ampule, 10 c.c. should be given subcutaneously and the dose repeated every one or two hours until symptoms are relieved. In severe cases the antivenin may be given intramuscularly or intravenously. In the event that antivenin is not available, only one method of treatment has been found of value, namely, incision and suction. An incision, about one-half inch long and about one-fourth inch deep, should be made over each fang mark, and another cut should be made at right angles to the first. Suction should be applied either by mouth or by mechanical means every twenty minutes out of each hour, for about fifteen hours.

These are the only measures that are of value; therefore, the victim should not consume alcoholic beverages or apply home remedies, such as kerosene, gunpowder, bile, or the formerly accepted treatment, potassium permanganate. Such treatments are now known to impede recovery. It should be remembered that the venom of the pit viper (rattlesnake and moccasin) acts slowly and that death in the most severe cases is usually a matter of hours. It should also be remembered

that persons who do not receive any treatment at all have better than an 85 per cent chance of recovery. It also should be pointed out that antivenin is polyvalent or effective against the bites of all rattlesnakes and moccasins in the United States. Consequently, the species of pit viper does not need to be known before the antivenin is given. Death rarely results if antivenin is received soon after the bite. Antivenin for the bite of the coral snake is not available in America.

Centipedes

The poisonous centipedes found in the arid and semi-arid regions of America possess a pair of appendages on the first segment or division of the body which are modified for the injection of venom. In the principal segment of these appendages is found the venom gland, which empties its poison through a pore near the end of the sharp spine with which the appendage terminates. Although commonly held in much dread, the venom of these animals has not been found to be dangerous to man. The puncture made by the sharp spine may introduce bacteria, which may produce a local infection that is more to be feared than the venom itself. The application of antiseptics should follow the bite of the centipede.

Scorpions

The scorpions, which are close relatives of the spiders, are found widely distributed in the tropical and semi-tropical regions of the earth. The last segment of the body, known as the telson, contains two venom glands which eject a secretion through two pores situated near the tip of a sharp terminal spine. The sting of the larger species is capable of introducing sufficient venom to cause severe symptoms even in an adult, but in a child alarming symptoms have been known to follow the sting of even the smaller species. Severe pain is usually experienced. The venom of the scorpion is capable of producing a marked rise in blood pressure, and, due to its apparent neurotoxic properties, a loss of sensation and partial inhibition of motor function may occur in the region of the sting. Treatment is principally symptomatic. According to some observers, relief of symptoms has followed spinal puncture. Wounds inflicted by these animals should be treated with antiseptics; these should aid in the prevention of local infection, which is not an infrequent result of scorpion sting. As a rule the sting of a scorpion causes only a temporary inconvenience to the victim.

Spiders

Tarantulas—With only few exceptions the bites of North American spiders and those in other parts of the world are relatively harmless to man. The fear of spiders which is so commonly shown by people has been, in the majority of cases, proved to be groundless. The bite of the much-suspected tarantula or banana spider, which is occasionally encountered in fruit stores, has been found by Baerg to be incapable of causing serious danger to human life. By inducing tarantulas to bite him he demonstrated the effect of the venom to be of short duration. He found rats and guinea pigs to be only temporarily affected by tarantula bites. In one experiment I injected intravenously into a small dog all the venom obtained from both poison glands of one tarantula. A very slight depression in blood pressure resulted. When added to a 15 c.c. tube of dog's blood in vitro, a drop of venom from the glands of one tarantula caused an increase of 3 c.c. in the volume of the red cells over the volume of the corpuscles in the control tube, after centrifuging for the same period of time. These effects and the local effect described by Baerg are similar to those obtained with very small doses of the venom of pit vipers and honeybees. The observations of Baerg on the venom of the black tarantula, Sericopelma communis, indicate that the venom of this species is more potent, since two guinea pigs died within thirty-four minutes following its bite. Baerg likewise experienced more discomfort and slower recovery from a bite of this species. However, he concluded that the effect of the venom is likely to be somewhat painful although, perhaps, in most cases it is not dangerous to man. Treatment is symptomatic. The application of ammonia water to the wound is of questionable value. The application of cold packs to the region of the bite should be of value, since retardation of the circulation should assist in the slow absorption of the venom. The injection of a vasoconstrictor such as epinephrine about the site of the wound should accomplish a similar result.

Black Widow Spider—Although the bites of tarantulas are not usually followed by grave symptoms in man, this, unfortunately, cannot be said of all spiders. Certain species belonging to the genus Lactrodectus are known to be highly poisonous. Species belonging to this genus are found in many parts of the world, and Lactrodectus mactans, known as the black widow, shoebutton, or hourglass spider, is quite generally distributed throughout the United States, being definitely known to exist in thirty-one states. Since it is found under such varying conditions as are present in California, Virginia, New Hampshire and North Dakota, it is reasonable to assume that

it may become established in all the states as well as in Canada.

Of 380 cases of bite due to the black widow spider which were collected by Bogen, 250 occurred in California; with few exceptions the remainder have been reported from our southern states. Quite a high percentage of the bites were received in outdoor toilets. In the 380 cases reported, seventeen fatalities occurred. In fatal cases death has occurred within thirty-four hours following the bite.

The symptoms following the bite of the black widow spider have been confused, in several instances, with those of an acute abdominal condition and the patient has been subjected to a major operation. According to Bogen, the most outstanding symptom is pain, usually beginning in the region of the bite. The pain becomes generalized within an hour and involves all the major muscle groups. The muscles of the abdomen become board-like, but rigidity is felt also in the muscles of the chest and back. Local tenderness in the abdomen is absent or slight. Spasms occur in the muscles of the extremities, causing writhing and screaming or moaning. A slight rise in temperature occurs, and the blood pressure is increased by as much as 40 mm. of mercury above normal and is accompanied by a slow pulse. Reflexes are hyperactive and the pressure of the spinal fluid is usually increased. Profuse perspiration, nausea, vomiting, constipation, and retention of urine are occasionally noted.

Treatment is largely symptomatic, but favorable results have been reported following the use of convalescent serum when administered soon after the bite was received. Bogen recommends local treatment of the wound with simple antiseptics and advises against the use of incision, cauterization, the injection of hypothetical antidotes and the use of alcoholic stimulants. Opiates and hypnotic drugs are indicated. The condition is self-limiting and recovery is usually complete within a few days.

Judging from the results of the experiments which I did recently in collaboration with Dr. C. B. Philip of the U. S. Public Health service, the potency of the venom of Lactrodectus mactans appears to be affected by seasons. Our experiments were done in mid-winter. In a short series of experiments we were unable to demonstrate any toxicity whatsoever from saline extracts of the freshly mascerated poison glands of the female black widow spider which were injected intravenously into small dogs and guinea pigs. Negative results also followed the bites of normal healthy female spiders that had not fed for several days. The spiders were induced to bite into the exposed vein of an anesthetized dog and into the shaved skin of guinea pigs. Further work will be necessary to establish whether our results are the rule or a striking exception.

Since it is evident that this particular spider is becoming more extensive in its distribution, and since eradication is in the best interests of the public, a short description of Lactrodectus mactans will now be given. Only the female is known to be dangerous. She is shiny, coal black, with a longish rounded abdomen that may measure one-half inch in length. Including the spread legs she is not usually over two inches in diameter. The under side of the abdomen is marked by a red or yellowish spot which bears some resemblance to the shape of an hour glass, hence one of the common names for this spider. It builds a web of irregular, tangled tough strands, which run in all directions but never have the flattened geometrical design of the orb weavers. Since the indiscriminate destruction of spiders should be discouraged, only those answering the foregoing description should be killed.

Honeybees

As is quite generally known the female honeybee, bumblebee, wasp and hornet possess a sting which is in reality a slightly modified ovipositor. This highly complex mechanism is capable of injecting the secretions of certain glands with which these animals have been provided. The sting proper consists of a sheath that encloses a pair of barbed stylets, which by appropriate muscles are moved backward and forward. By these movements the sting penetrates the skin, and the venom, which is emptied from the venom sac into the base of the sheath, is carried into the puncture. The sting of some species of bee has been so universally experienced that it is hardly necessary to describe the symptoms. It is not, however, generally known that the physiologic action of the venom of the honeybee resembles very closely that of the rattlesnake. Severe poisoning following multiple bee stings produces symptoms that can hardly be distinguished from those following the bite of the rattlesnake, and there are instances on record of bee stings resulting in the rapid death of the victim. Severe poisoning with bee venom causes a marked fall in blood pressure, destruction of many red blood cells, hemorrhages from the smaller blood vessels, and marked injury to tissue about the site of the wound. Nausea and vomiting frequently result from a single sting.

A series of experiments was done with the venom of the honeybee in a manner similar to our investigations on snake venoms. It was found

that the venom from six bees, when given intravenously to a dog weighing 4.5 kg., under ether anesthesia, was sufficient to cause the death of the animal. The marked fall in blood pressure is accompanied by a decided decrease in the volume of the kidney and a striking increase in the volume of the hind limb. There is a marked increase in the ratio of the volume of corpuscles to plasma when the venom is given either in vivo or in vitro. The venom causes the erythrocytes to swell, and hemolysis results if sufficient venom has been introduced. The blood pressure of the rabbit is lowered and the isolated heart of the rabbit is rapidly incapacitated by comparable doses of the venom of the honeybee.

When given intravenously to the guinea pig, occlusive bronchospasm results and the animal dies in a manner comparable to that following lethal doses of histamine, rattlesnake venom, and the injection of an antigen to which the guinea pig is sensitive. Finally, the guinea pig uterus is thrown into maximal contraction by doses of this venom.

It is interesting that animals so widely seperated in the animal kingdom as the bee and the snake should elaborate toxins that are identical in the majority of their physiologic actions. There are two outstanding differences in the action of the venom of the honeybee and that of the rattlesnake. First, occasionally an intravenous injection of the former venom may cause an initial rise in blood pressure followed by a marked fall. This we have never observed with injections of snake venoms. Second, after the blood pressure has recovered from an injection of bee venom the dog is refractory to a second injection. This refractory condition in one of our experiments was still present after two hours, but in another case it had disappeared after five hours. A similar phenomenon has been observed only once or twice in a long series of experiments with the venom of the rattlesnake. Baerg has reported that the rat appears to develop immunity to tarantula venom following two or three bites on successive days. It may be that the rat develops a refractory state similar to what has been observed with the venom of the honeybee but of longer duration.

I have been able to produce sufficient immunity in dogs by repeated doses of this venom to protect them against a fall in blood pressure, when a dose that is lethal for a normal animal is given intravenously.

The idea that the active constituent of the venom is formic acid has been shown to be erroneous. According to Flury it appears to be a sapotoxin-like complex of lecithin and basic components.

The treatment of bee stings with ammonia and soda water was instituted when it was thought that the venom of bees was principally formic acid. It was believed that alkalies would neutralize the supposedly acid secretion and thus render the venoms inactive. The best method of treatment for the sting of bees is one that will retard the absorption of the venom. Cold applications to the wound soon after it is inflicted seems indicated. As a rule the sting of a bee is not serious, but should alarming symptoms result, they should be treated symptomatically. Epinephrine has been shown to be of benefit in restoring the blood pressure of the dog when it has been lowered by intravenous injections of the venom of the honeybee.

THE USE OF ELECTRO COAGULATION IN THE TREATMET OF RECTAL CARCINOMA*

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I WISH to call your attention to the use of electro coagulation as a means of treating carcinoma of the rectum, because, in certain cases, I believe, it presents distinctive advantages over other methods of treatment. It can be used in the majority of rectal carcinomas where radium might be indicated, and in some cases, I think, to better advantage. This is particularly true where there is a large cauliflower growth attached to the entire circumference of the rectum and filling its lumen. In this type of tumor the mechanical difficulty of properly spacing radium implants is very great. A radon seed of 1 to 1.5 millicurie hours will irradiate approximately 1 cubic cm. of tissue, but the accurate spacing of seeds this distance apart throughout a large tumor mass, is a practical impossibility. The insertion of a tube of radium element into the lumen of the tumor so that the proper amount of radiation will be secured in all directions is likewise difficult. Relying upon the fact, that carcinomatous tissue is more susceptible to radium than normal tissue, a dose sufficiently large to reach all carcinomatous tissue may be used, but in doing so there is always damage to normal tissue which while it may not be irreparable, at least produces considerable unnecessary toxicity.

On the other hand, with electro coagulation these large tumors are actually destroyed. The coagulated tissue is removed so one can accurately

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determine at the time of treatment just what has been accomplished in the way of tumor destruction. Another advantage is the absence of prolonged pain or serious toxic symptoms which sometimes arise following radium therapy. With flat lesions where the radon seeds may be accurately spaced the results are more satisfactory. Results, however, are equally good with electro coagulation without the danger of prolonged after discomfort or toxic symptoms.

The following types of cases are the best to be done by electro coagulation:

1. Early lesions, preferably a low-grade of malignancy, either pedunculated or flat.
2. Cases in which old age or other physical impairments would contraindicate radical abdomino perineal or perineal methods of excision.
3. Inoperable cases, particularly large growths which are producing distressing rectal symptoms.
4. Case with partial or complete obstruction due to large rectal growths.

The first group of cases, that is those in which the lesion is small, is the group which offers the greatest chance of permanent cure yet calls for the greatest firmness and judgment on the part of the physician. This method of treatment obviously, appeals to the patient. There is little pain, the period of hospitalization and disability is short, colostomy is avoided, and sphincter control is maintained. We all know, however, that even with small lesions, metastases may be present. Therefore, we must be cautious in accepting purely local methods of removal. While no definite rules can be laid down as to which of these small lesions we may safely treat, in general, we feel justified in using this method only in cases fulfilling the following requirements:

First, small lesions with a definite pedicle. These tumors are usually of a low malignancy, they metastasize late and carcinomatous changes most often first occur in the portion of the tumor distal to the bowel wall. Secondly, the flat button-like lesions. These are almost always more malignant so we must be more cautious. Penetration of the muscular layers of the rectum and involvement of adjacent lymph nodes is not uncommon with small tumors of this type. Size is not a positive criterion, but a tumor of this type more than one cm. in diameter, is not likely to be suitable for coagulation. It is more important that the growth be freely movable with the mucosa and not fixed to the submucosal or muscular layers. Fixation of a growth of this type, regardless of the size is a contraindication of electro coagulation, or any other method of local removal. Even by adhering to these rules it is admitted that we may occasionally coagulate a small lesion which has metastases which could have been removed by a radical abdominoperineal excision. I believe, however, that the increased mortality involved in radical surgery, would more than offset this occasional metastatic involvement, provided we use proper care in selecting our lesions for coagulation. Obviously the danger lies in the physician's applying this method to cases which are really too far advanced. Therefore, it is most important that one determine certain limits beyond which he will not use electro coagulation, and not be swayed by personal inclinations nor the insistence of the patient.

The second group, or those in which advanced age or other physical impairments contraindicate radical surgery, offer less of a problem. Here we have no choice but to use the less radical methods. In some of these cases even though the growth may be quite far advanced it may still be possible to completely eradicate it locally. In a few instances metastases will not have occurred and a permanent cure results even in these cases. In any event the patient's life will be prolonged and he will die a painless metastatic death, and be spared the pain of an invading-ulcerating, obstructive rectal lesion.

The third group is those in which radical operation is contraindicated because of the extent of the cancer. This particularly applies to large growths which fill the rectum with a cauliflower-like mass, are ulcerating, definitely fixed, or are invading adjacent organs. Also there is usually pain, tenesmus and the frequent passage of bloody mucus. These patient are most miserable, having varying degrees of emaciation and metastases have most certainly occurred. While the patient cannot be cured, most of their distressing symptoms can be abolished, or greatly ameliorated. Their lives are prolonged in comparative comfort.

The fourth type of case is that in which partial or complete obstruction is present, due to a large tumor occluding the lumen of the rectum. In these cases I think electro coagulation unquestionably offers something distinctly better than our present accepted methods. In this type of case, the first suggestion of the surgeon has been to do a colostomy to relieve obstruction. This is totally unnecessary at least as an emergency measure. It is quite simple to coagulate out enough of the tumor to allow the immediate passage of fecal material. In many cases sufficient lumen can be maintained so that colostomy can

be avoided. In any event it can be postponed until the bowel has been adequately decompressed, and thus obviate the mortality rate incident in colostomy on an obstructed bowel.

Obviously this method of treatment has a greater field of usefulness in those cases where the carcinoma is situated below the reflection of the pelvic peritoneum. The danger of attempting to coagulate a tumor lying above the peritoneal reflection, except in cases where the tumor is small or has a definite pedicle, is at once apparent. There are, however, a certain number of cases where the tumor occurs in the rectosigmoid, and a portion of the growth lies below the pelvic peritoneal reflection, and a portion lies above. These tumors can be coagulated if care is used, though not so thoroughly as those lying entirely below the peritoneal reflection. In these cases, if extensive coagulation is contemplated, a preliminary colostomy should be done. If a colostomy is present coagulating through into the peritoneal cavity is not of such serious consequence.

For anesthesia we usually use a spinal injection of 50 mg. of procaine in 1 cc. of spinal fluid, or nitrous oxide and oxygen. Preliminary to this the patient is given 1/32 grain of dilaudid and 3 grains of nembutal.

The actual procedure of the electro coagulation is not difficult if certain principles are kept in mind. One does not care to penetrate the bowel wall, especially above the peritoneal reflection or to carelessly coagulate into adjacent organs. For that reason on must determine the approximate distance beyond the tip of the coagulating instrument where coagulation ceases. This must be estimated in each case before proceeding with the actual destruction of the tumor. This is necessary because different tissues offer different degrees of resistance to the same amount of current, fatty tissue offering the greatest resistance, and muscle the least. Other factors also enter into the picture, such as the amount of vascularity, the degree of physiological activity, etc. Likewise dead tissue offers greater resistance than living. Cancer tissue varies in all of these respects. Some cancer tissue is very embryonal and vascular, other fibrous and firm. Likewise areas of dead and necrotic tissue often occur, hence the necessity of using the cancer as a testing ground to determine its reaction to the coagulating current, rather than testing it on some extraneous inert material. This is best done by inserting a coagulating needle into various portions of the growth and gradually stepping up the current until the proper strength is decided upon. A current which produces coagulation 1 to 1.5 cm. from the point of contact is satisfactory. The method of attack depends upon the type of growth. In all cases the coagulation is done through a proctoscope or anoscope, depending upon the location of the growth. A large proctoscope or anoscope 1-¼ inches in diameter made of bakolite or other non-conducting material is best, though an ordinary metal instrument will do.

A good visualization of the tumor mass is essential. In the case of a small growth with a pedicle, the pedicle is usually grasped with a forcep and current applied through the forcep itself by touching it with the coagulating needle. In case of a flat growth the needle is used direct. It is inserted into the tumor as nearly as possible at right angles. Penetration is made to the depth of the tumor and the current applied. This will coagulate a certain area of the tumor laterally, as well as a short distance under the base. The current is applied until the tissue is a grayish-white. The needle is then withdrawn and reinserted until the whole tumor is so treated for an area of at least one cm. beyond its periphery. For the large cauliflower and obstructive growths, the approach is different. Coagulation is begun in that part of the tumor most distant from the wall of the rectum. It may be done in one or two ways; a piece of the tumor may be seized with a biopsy forcep and the current applied through the forcep. When this bite is coagulated, it is removed and another bite taken in an uncoagulated portion. This is continued, gradually coagulating and removing the tumor mass toward the bowel wall. In this way the entire tumor can be gradually destroyed and removed. If care is taken not to remove any but coagulated material, bleeding will not occur. The other method is to insert a coagulating needle into the tumor at various points distal to the bowel wall. When an area is thoroughly coagulated, the destroyed material is gently curetted out, care being taken not to curette too closely to uncoagulated tissue. Too vigorous curetting will produce bleeding. Palpation will tell when sufficient coagulation has been accomplished. When complete, one has the impression that where before there was a large fleshy tumor, now there is a large cavity surrounded by a thin shell.

The patient is now returned to bed. There is little pain or reaction. In fact, one patient who had a particularly large carcinoma coagulated, got out of bed four hours after the coagulation had been done and in the absence of his nurse

walked to a bath room several doors away. With a large tumor, however, I believe it is better for the patient to remain in bed for at least a week. The only after care for the first ten days is to keep the bowel movement soft with liquid petrolatum. No local examination is done for fear of producing a secondary hemorrhage, though to date we have had none. On the tenth day we usually insert a proctoscope for examination, and begin mild irrigation with warm boric acid solution or potassium permanganate. At the end of about six weeks it is decided whether or not further coagulation is advisable. With the smaller lesions, destruction of the tumors is usually complete and the bowel is healed. In large inoperable lesions there are usually unhealed areas, but discharge is less, tenesmus and pain are relieved, and a large lumen is present through the rectum. After seven or eight weeks if there are unhealed areas, and it is evident that one or more areas of tumor are left, they should be coagulated. Future treatment must then depend upon circumstances in the individual case.

Time and experience will probably give further data as to the value of this method. In any event, I feel sure that in coagulation we have another valuable method of combating cancer, particularly in certain types of cases, and in persons unable to withstand radical surgery. In cases with large obstructive growths, I feel that electro-coagulation will produce an almost revolutionary change in our operative mortality rate. Where before we were often compelled to do a colostomy upon an obstructed bowel and so have a high operative mortality we can now relieve the obstruction with scarcely any danger at all by electro-coagulation. If colostomy is necessary later it can be done on a bowel which has been adequately decompressed and hence with less danger.

MALIGNANCY OF THE RECTUM AND COLON AS DETERMINED BY THE GRUSKIN TEST*

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THE progressive interest of this comparatively recent contribution is deserving of more than cursory consideration by virtue of the excellent results obtained. The medical profession has long awaited some means of early diagnosis in malignancy other than the methods available today. A perusal of post-operative results of this portion of the intestinal tract prompts us to realize that even radical surgical intervention does not preclude "cure" unless the diagnosis is made early. Biopsy is not always possible nor feasible in high lying growths in the sigmoid, and x-ray after opaque enema is only helpful when a definite mass causing deformity is present. Only too frequently a small nodule or a suspicious polyp offering some suggestive symptom, as bleeding, and presenting an ulcerative process, becomes in weeks and months later, a fulminating definitely destructive process for which surgery, x-ray and radium are of little value.

The test as outlined by Gruskin is not a substitute for the various methods employed. In all cases the history should be meticulously tabulated, digital examination should be performed always and followed by use of the procto-sigmoidoscope. Roentgen-ray after an opaque enema should be a routine procedure especially when there is suspicious pathology in the upper rectal ampulla or in the colon. Biopsy is an important and most helpful adjunct but even before the characteristic histopathologic picture is noted and long before definite deformity is observed in the x-ray, the Gruskin test may be used to advantage.[3]

Various tests have been suggested in the diagnosis of malignancy. For instance, the Bendien reaction[30] is a precipitation test and embodies the use of vanadium, acetic acid and serum. It, however, is not specific since a positive reaction does not prove the presence of a tumor nor does a negative reaction exclude one. These results have been verified by the British Cancer Commission. Another precipitation the Botelho reaction[6] in which is used citric acid, iodine—potassium iodide solution with serum, offers about 75 per cent correct results, although the observations of Baty and Green[4] conclude that the test is of no value in the diagnosis of carcinoma. Weil and Barun described a method by which the flocculating power of cancer serum upon lecithin was noted. The test was verified in 17 cases. The Kahn[21] test is a precipitation on serum using ammonium sulphate. Correct results were obtained in 11 per cent of cases. Fry suggests[11] a serological reaction in which an alcoholic extract of breast carcinoma is used. Seventy-one per cent correct positives and 78 per cent correct negatives were the results obtained. In studying the Thomas-Binetti reaction, Mondain,[31] Douris and Beck concluded that the results were obtained because the neoplastic extract was not aseptic

*From the Proctologic Service of Dr. C. F. Martin, Graduate Hospital, U. of P., and Dr. H. Z. Hibshman, Temple University Hospital.
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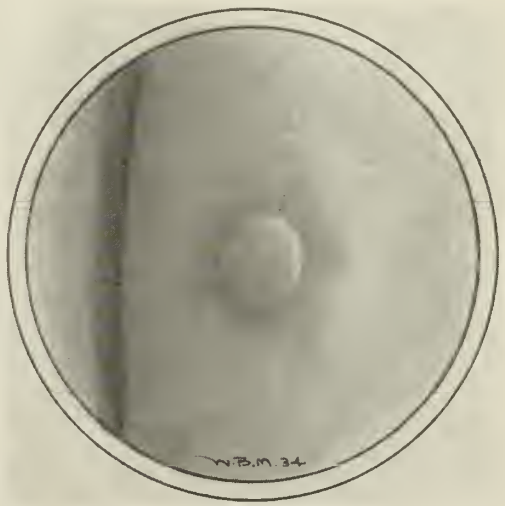
and considered the microbic action cause for the discoloration of the methylene blue, but they conclude their remarks by stating that the cancer serum does not reduce methylene blue. The Hirzfeld-Halber[18] represents a complement fixation test in which alcoholic extracts of carcinoma tissue are used with cholesterol as an antigen. Diagnosis of cancer was made in 50 to 60 per cent of cases.

In the Abderhalden test, the blood serum is dialyzed with substrate and tested for color reaction with ninhydrin. A violet color occurs if positive. Various observers report correct results in 55 to 70 per cent of cases, although carcinoma and sarcoma cannot be differentiated.[25] The Fuchs reaction is based on the proteolytic action of sera from cancer patients on normal fibrin. Twenty-five per cent of positive reactions were obtained in non-malignant cases.[45] The Roffo test[12] embodies a neutral red action with serum. It is of value as a diagnostic aid. A negative test, however, does not rule out tumor.

At an earlier date Marcus[28] described an antitryptic reaction but the procedure was more fully examined by Brieger and Freburg.[7] The test as presented by Ascoli[1] and Izor[19] was discredited by Leitch[25] in 1914. Based on the theory of a destructive action of normal serum on cancer cells, Freund and Kaminer[10] added another test to this field of research. Shaw-MacKenzie[35] mentioned a turbidity test using saponified extracts of cancer tissue. In the Landau reaction[23] a 95 per cent alcoholic extract of carcinoma tissue is used as a precipitation test with serum. The test has been found accurate in 90 per cent of cases with malignant tumors, but reacts with tuberculous and syphilitic sera and those of normal pregnancy.

Another complement fixation test is that of Sanpietro and Tesa.[33] Weinberg and Mello[42] in 1910 obtained only 20 positive results from the sera of 100 cancer cases. Later Von Dungern[38] claimed 100 per cent correct results with his test but other observers failed to substantiate his claims. Lederer's reaction[24] is based on the protective action of the blood against suspension colloids which is reduced if carcinoma exists. Zwerg and Lauber confirmed its reliability histologically in 33 of 44 cases. In the Von Gutfeld reaction[39] an alcoholic extract of carcinoma tissue is used. Ten per cent false positives and 50 per cent false negatives render the test of no clinical value. The hemolytic properties of cancer serum was noted by Weil[41] and on this was based the reaction of Elsberg.[8]

The Gruskin Test for Malignancy:[14] This reaction is based on the theoretical consideration that malignant cells are born embryonic and remain embryonic in contra-distinction to normal cells which are born embryonic but later mature. The protein of normal cells differs from that of these embryonic malignant cells, which, as a chemical proof, may be shown by the fact that malignant growths and embryonic cells when incinerated leave a heavy deposit of organic salts, whereas normal tissue and benign growths, upon incineration, permit only a very faint deposit of inorganic salts. Biologically, in syphilis in utero during the first six weeks, the spirochete does not attack the fetus but rather is to be found in the placenta or maternal site. Thus, it is clearly evident that when the fetal cells are truly embryonic the spirochete does not attack them except



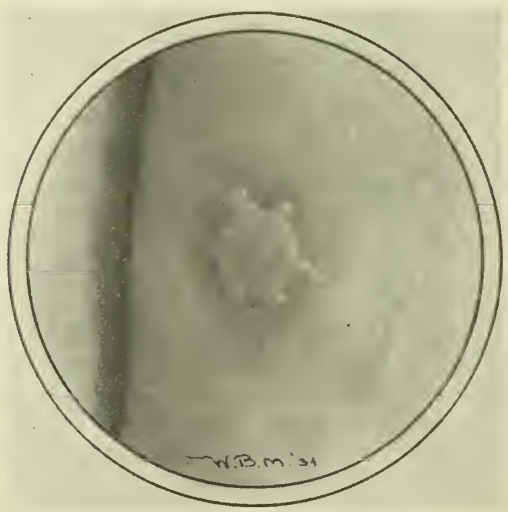
Negative McNett
FIGURE 1

when the cells become mature. By virtue of the fact that the malignant cell is embryonic in character and that its protein is different from that of the normal cell, the specificity of these proteins is manifested by their production of a precipitation with malignant sera and pseudopod formation when injected intradermally. Since malignant cells are embryonic in character, antigens have been prepared from pure embryonic cells. For carcinoma are used the epithelial cells obtained from the pancreas or liver of embryonic calves; and for sarcoma is used Wharton's jelly for the embryonic stellate connective tissue cells which it contains. Alcoholic extracts have been used as antigens for the serological reaction[13] and saline extracts of the same for the intradermal test. Because of the homologous nature of the embryonic and malignant proteins, the extracts produce a precipitation with the sera of malig-

nant patients, and pseudopod formation when injected intradermally into malignant individuals.

Method: The test is intradermal and has its greatest value in early cases and those in which malignancy is suspected. One-tenth (0.1) of a cubic centimeter of the Gruskin antigen is injected intradermally with a 27 gauge needle. The outer surface of the arm is usually selected. A positive reaction is characterized by a slight area of inflammation with pseudopod formation which occurs within fifteen minutes. No such reaction takes place when negative. A control of physiologic salt solution may be used although no inflammation or pseudopod formation should follow its injection. In each case, it is important to inject the antigen intracutaneously, slowly and without force as false pseudopods may result.[15]

To emphasize the sensitivity and specificity of the test it is interesting to relate the difficulty Gruskin had with various antigens which did not prove satisfactory, simply because the embryonic livers obtained were from the embryo calves of cows which were tuberculin reactors, showing that if the mothers were tuberculous, the protein of the cells in the embryo was so changed that it would not make satisfactory material for antigen. This produced some criticism on the part of a few workers, claiming that the antigen was not stable, or in other words, that some antigens were unsuccessful while others proved efficient in 100 per cent. This criticism, in a way, led to the observation mentioned above, that when embryo calves of reactor cows were used the antigen was unworkable, but when livers from the normal embryos of normal cows were used, the antigen was fully satisfactory. It is interesting to note[16] that those who found the Gruskin reaction correct in only 75.2 per cent of cases were those who did not test each lot of antigen on known positive and negative cases in order to determine its specificity, but used the lots of antigen at random, which was contrary to Gruskin's instructions. The fact is, that when a certain lot was satisfactory, and all rules were observed, the test gave practically 100 per cent correct results. Antigens made from the livers of the tuberculous embryos gave false reactions, which only emphasizes the specificity of the homologous embryonic protein and its relation to malignancy.



Positive McNett
FIGURE 2

Contra-indications: It should be emphasized that the test is questionable in cachectic cases where the skin is dehydrated and emaciated since the skin has lost its ability to respond to an homologous protein; in jaundiced patients because the surface tension of the skin is changed; in inflammatory conditions; in high fever; immediately following operation when epithelialization is taking place and after heavy doses of radium or x-ray. In the dehydrated and emaciated patients the serological test[13] should be resorted to when a diagnosis is required.

The following represents a résumé of 75 cases from our service giving a positive or negative Gruskin test which were verified by operation, necropsy or both.

PROCTOLOGIC SERVICE

No.	Name	Age	Gruskin Test	Histo-Pathology	Location
1	E.C.	55	Pos.	Adenocarcinoma	Rectum
2	T.E.	50	"	"	"
3	M.R.	44	"	"	Sigmoid
4	G.M.	49	"	"	Rectum
5	M.L.	60	"	"	"
6	M.E.	64	"	"	Recto-sig
7	R.L.	72	"	"	" "
8	M.O.	38	"	"	Sigmoid
9	M.N.	44	"	"	Rectum
10	W.Z.	51	"	"	"
11	W.M.	56	"	"	"
12	W.M.	70	"	"	"
13	E.W.	61	"	"	Recto-sig
14	E.P.	59	"	"	Sigmoid
15	D.O.	60	"	"	"
16	D.E.	44	"	"	Recto-sig
17	O.R.	50	"	"	" "
18	J.M.	46	"	"	" "
19	G.C.	60	"	"	Rectum
20	E.O.	41	"	Epithelioma	Anus
21	E.C.	53	"	Adenocarcinoma	Rectum
22	M.T.	?	"	Ca. Metastasis	"
23	F.W.	41	"	Adenocarcinoma	Recto-sig
24	U.G.	49	"	"	Rectum
25	L.S.	62	"	"	"
26	C.M.	40	"	"	"
27	M.R.	32	"	"	"
28	L.K.	60	"	"	"
29	M.S.	51	"	"	"
30	L.J.	70	"	"	"
31	R.H.	42	"	"	Sigmoid
32	F.Mc.	34	"	"	Rectum
33	J.S.	68	"	"	"
34	H.O.	40	"	"	Sigmoid
35	J.F.	65	"	"	"
36	H.S.	35	"	"	Recto-sig
37	H.B.	62	"	"	Rectum
38	A.M.	?	"	"	Sigmoid
39	A.J.	49	"	"	Recto-sig
40	T.S.	60	"	"	A. R. Line
41	S.R.	56	"	"	Rectum
42	M.H.	48	"	"	"
43	P.D.	37	"	"	"

44	M.S.	74	"	"	"
45	W.E.	61	"	Epithelioma	Anus and Rectum
46	A.B.	?	"	Adenocarcinoma	Sigmoid
47	F.W.	50	"	"	Recto-sig
48	M.W.	46	"	"	Rectum
49	F.W.	48	"	"	"
50	R.H.	29	"	Chr. Inflam. Tissue	Rectal (stricture) Ulcer proctocolitis
51	M.S.	63	"	Adenocarcinoma	Rectum
52	F.R.	50	"	"	"
53	G.D.	53	"	"	"
54	R.W.	53	"	"	Sigmoid
55	C.Mc.	34	"	"	Colon
56	M.G.	66	"	"	Rectum
57	J.L.	72	"	"	Rectal septum
58	V.C.	59	"	"	Rectum
59	C.M.	34	"	"	Sigmoid
60	E.J.	33	Neg.	"	Rectum
61	I.R.	76	"		Amebic proctocolitis
62	M.S.	69	"		Benign adenoma
63	M.Z.	44	"		Colitis, hemorrhoids
64	C.S.	23	"		Fistula
65	M.D.	23	"		Abscess
66	S.L.	50	"		Tb. abscess, fistula
67	A.S.	49	"		Anal ulcer
68	V.A.	41	"		Hemorrhoids
69	R.R.	23	"		Pruritus ani
70	M.J.	39	"		" "
71	T.M.	31	"		Abscess
72	M.N.	32	"		Myxorrhea proctocoli
73	F.F.	37	"		Chr. ulcerative colitis
74	S.D.	50	"		Hemorrhoids
75	F.M.	23	"		Amebic proctocolitis
76	M.G.	34	"		Pruritus ani

CASES OF DR. WAYNE BABCOCK

Name	*Gruskin Test*	*Pathology*
E.H.	Pos. Ca.	Ca. of breast
V.W.	Pos. Ca.	Met. adenocarcinoma of liver
L.D.	2* Pos. Ca.	Carcinoma (of breast)
M.R.	2* Pos. Ca.	Met. adenocarcinoma
C.S.	Neg. Ca.	Chr. cystic mastitis
M.McG.	Neg. Ca. & Sa.	Ulcer of leg
S.P.	Pos. Ca.	Ca. of stomach
A.H.	Pos. Ca.	Ca. of rt. breast w. met. to axilla
A.M.	Neg. Ca.	Subacute retroperitoneal abscess
M.M.	Neg. Ca.	Acute purulent appendicitis
E.G.	Pos. Ca.	Ca. of left ovary
K.M.	Neg. Ca.	Left chronic perinephritis
L.G.	Neg. Ca.	Berger's disease
J.C.	Pos. Sa.	Lymphosarcoma
B.B.	Neg. Ca.	Parkinsonism
M.B.	Neg. Ca.	Adenofibroma of right breast
M.S.	Pos. Ca.	Ca. of stomach
B.H.	Pos. Ca.	Ca. of breast
C.C.	Pos. Ca. & Sa.	Hodgkin's disease
L.M.	Pos. Ca. & Sa.	Hodgkin's disease
E.H.	2* Pos. Ca.	Adenocarcinoma of breast
M.VL.	Pos. Ca.	Epithelioma
M.G.	Neg. Ca. suspicious	Adenomatous goitre
Z.R.	Pos. Ca.	Leiomyosarcoma with metastasis
A.B.	Pos. Ca.	Carcinoma of pancreas
O.G.	Pos. Ca.	Carcinoma of soft palate
M.F.	Pos. Ca.	Carcinoma of sigmoid
S.K.	Pos. Ca.	Chronic cholecystitis
F.G.	Pos. Ca.	Carcinoma of larynx
J.C.	Pos. Ca., Neg. Ca.	Lymphosarcoma
C.S.	Neg. Ca.	Chronic cystic mastitis
M.A.	Pos. Ca.	Malignancy of left ovary
R.O.	Pos. Ca.	Ca. of esophagus
M.B.	Neg. Ca.	Abscess of lung
M.R.	Pos. Ca.	Carcinoma of sigmoid with abdominal and pelvic metastasis
C.S.	Neg. Ca.	Chronic cystic mastitis
M.S.	Pos. Ca.	Adenocarcinoma
A.A.	Neg. Ca.	Fibro-adenoma
M.P.	Neg. Ca.	Cholelithiasis
M.Mc.	Neg. Ca.	Gall bladder disease
A.C.	Neg. Ca.	Chronic appendicitis
S.D.	Pos. Ca.	Carcinoma, cardiac end of stomach
A.M.	Neg. Ca.	Retroperitoneal abscess
M.M.	Neg. Ca.	Acute purulent appendicitis
E.G.	Pos. Ca.	Carcinoma of left ovary
K.M.	Neg. Ca.	Chronic perinephritis
M.B.	Pos. Ca.	Carcinoma, metastatic
C.H.	Pos. Ca.	Ca. of rectum c involvement of prostate
L.G.	Neg. Ca.	Berger's disease
J.C.	Neg. Ca., Pos. Sa.	Lymphosarcoma
D.L.	Neg. Ca.	Lymphadenitis
M.M.	3* Pos. Carcinoma	Inoperable Ca. of cervix
M.R.	Pos. Ca.	Carcinoma, distal end of colon
M.Ra.	Neg. Ca.	Gastric ulcer
M.G.	Pos. Ca.	Ca. of left breast
L.L.	Pos. Ca.	Ca. of esophagus
M.T.	Pos. Ca.	Scirrhous carcinoma
L.Z.	Neg. Ca.	Cholecystitis
M.K.	Pos. Ca.	Basal cell Ca.
M.B.	Pos. Ca.	Ca. of cervix
M.T.	Pos. Ca.	Ca. of rectum, met.
M.Tu.	Pos. Ca.	Scirrhous Ca. of sigmoid and liver
M.B.	Neg. Ca.	Fibroma (adenofibroma)
M.Sz.	Pos. Ca.	Carcinoma of stomach
B.H.	Pos. Ca.	Carcinoma of breast
R.R.	Pos. Ca.	Carcinoma
P.F.	Pos. Ca.	Sarcoma

CASES OF DR. CHEVALIER JACKSON

Name	*Gruskin Test*	*Pathology*
A.F.	Pos. Ca.	Sq. cell Ca.
H.F.	Pos. Ca.	Carcinoma
G.F.	Neg. Ca.	Chondroma
M.R.	2* Pos. Ca.	Sq. cell Ca., No. 4
J.R.	Pos. Ca.	Sq. cell Ca.
F.H.	Neg. Ca.	Acute inflammatory tissue
H.Y.	Neg. Ca.	Autopsy—cancer
M.H.	Pos. Ca.	Adenocarcinoma
M.M.	Pos. Ca. 2*	Sq. cell carcinoma No. 4
J.We.	Suspicious Neg.	Chr. inflammatory tissue
J.We.	2* Pos.	Squamous cell carcinoma No. 1
O.G.	Pos. Ca.	Sq. cell Ca.
M.O'C.	Pos. Ca.	Sq. cell Ca.
H.F.	Pos. Ca.	Carcinoma
M.V.	1* Pos. Ca.	Sq. cell Ca.
A.R.	Neg. Ca.	Chr. inflammatory tissue, Ca.
M.G.	Pos. Ca.	Sq. cell Ca., No. 2
N.R.	Pos. Ca. 2*	Met. cylindrical cell Ca., No. 4
M.F.	Pos. Ca.	Sq. cell Ca.
M.M.	Pos. Ca.	Carcinoma No. 2
M.McM.	Faint Pos. Ca.	Chr. ulcerative esophagitis
W.S.	1* Pos. Ca.	Sq. cell Ca.
A.F.	Pos. Ca.	Sq. cell Ca.
M.C.	Pos. Ca.	Sq. cell Ca.
H.F.	Pos. Ca.	Faintly positive for Ca.
G.F.	Neg. Ca.	Chondroma
M.R.	2* Pos. Ca.	Sq. cell Ca., No. 4
J.R.	Pos. Ca.	Sq. cell Ca.
F.H.	Neg. Ca.	Acute inflammatory tissue
H.G.	Neg. Ca.	Cancer (autopsy)
M.H.	Pos. Ca.	Adenocarcinoma
M.M.	Pos. Ca.	Sq. cell carcinoma No. 4
J.We.1	Susp. Ca.	Chr. inflammatory tissue
J.We.2	2* Pos. Ca.	Sq. cell carcinoma, No. 1
M.O'C.	Pos. Ca.	Sq. cell Ca.
H.F.	Pos. Ca.	Faintly positive for carcinoma
M.V.	1* Pos. Ca.	Sq. cell carcinoma
A.R.	Neg. Ca.	Chronic inflammatory tissue
M.G.	Pos. Ca.	Sq. cell Ca., No. 4
N.R.	Pos. Ca.	Met. cylindrical cell Ca., No. 4
M.F.	Pos. Ca.	Sq. cell Ca.
M.M.	Pos. Ca.	Carcinoma No. 3
M.Mc.	Faint Pos. Ca.	Chronic ulcerative esophagitis
W.S.	Pos. Ca.	Sq. cell Ca.
C.R.	Pos. Ca.	Ca. of larynx
M.MI.	Pos. Ca.	Carcinoma, metastatic
E.W.	Pos. Ca.	Ca. of larynx
B.T.	Pos. Ca.	Ca. of larynx

CASES OF DR. HAMMOND

Name	*Gruskin Test*	*Pathology*
M.F.	Neg. Ca.	Pacchymeningitis cervicalis
F.W.	2* Pos. Ca.	Adenocarcinoma of rectum and sigmoid (autopsy)
M.G.	Pos. Ca.	Inoperable Ca. of cervix
M.Br.	Pos. Ca.	Ca. of cervix

CASES OF DR. HERSEY THOMAS

Name	*Gruskin Test*	*Pathology*
M.W.	3* Pos. Ca.	Ca. of uterus with metastasis
J.C.	Pos. Ca.	Ca. of prostate
M.V.	Pos. Ca.	Cystadenoma
E.T.	Pos. Ca.	Ca. of ascending colon
P.J.	Pos. Ca.	Ca. of uterus
I.P.	Faint Pos. Ca.	Ca. of uterus
M.H.	Pos. Ca.	Inoperable Ca. of cervix u.
J.B.	2* Pos. Ca.	Ca. of cervix
M.K.	Pos. Ca.	Ca. of cervix
M.MH.	Neg. Ca.	Mastoiditis
C.S.	Neg. Ca. & Neg. Sa.	Ratke pouch tumor
T.J.	Pos. Ca.	Ca. of liver
A.M.	2* Pos. Ca.	Ca. of bladder and sigmoid colon
G.T.	Neg. Ca.	Endocrine dysfunction
M.S.	Neg. Ca.	Benign adenoma

CASES FROM OTHER SERVICES

Name	Gruskin Test	Pathology
M.W.	Neg. Ca.	Cirrhosis of liver
M.S.	Pos. Ca.	Acute yellow atrophy of liver
M.H.	Pos. Ca.	Recurrent Ca. of breast
M.F.	Pos. Ca.	Ca. of stomach, met. to liver
M.D.	Pos. Ca. X-ray neg.	Carcinoma, autopsy
M.Mc.	Neg. Ca. & Neg. Sa.	Margolius' ulcer
F.H.	Pos. Sa.	Glioma
S.P.	Pos. Ca.	Ca. of stomach
F.R.	Pos. Sa.	Glioma of cerebellum
B.H.	Pos. Ca.	Ca. of lung, with met.
M.B.	Pos. Ca.	Ca. of right breast
M.S.	Pos. Ca.	Malignancy of abdomen
A.H.	Pos. Ca.	Ca. of breast with metas.
F.B.	Neg. Ca.	Peptic ulcer
M.V.	Pos. Ca.	Ca. of larynx
M.C.	Pos. Ca.	Ca. of breast, metastatic
M.C.	Neg. Ca. & Sa.	Multiple myelomata
M.G.	Pos. Ca.	Met. Ca. of right lung
B.B.	Neg. Ca.	Parkinsonism
D.C.	Pos. Ca.	Primary Ca. of omentum
T.V.	Neg. Ca.	Lues, myocarditis
J.S.	Pos. Ca.	Ca. of oesophagus
M.C.	Pos. Ca.	Adenocarcinoma
D.F.	Pos. Sa., slight	Family history of Sa.
S.P.	Pos. Ca.	Ca. of stomach
H.B.	Pos. Ca.	Ca. of liver and pancreas
M.C.	Pos. Sarcoma	Osteosarcoma of right hip
A.K.	Pos. Ca. 2*	Met. melanosarcoma
F.K.	Pos. Sa.	Sarcoma of left inguinal region
M.R.	Pos. Ca.	Epithelioma
E.F.	Pos. Ca., Neg. Sa.	Hypernephroma of right kidney with metastasis to lungs
C.C.	Neg. Ca., Pos. Sa.	Cervical and saphenous lympho-sarcoma
K.L.	Neg. Ca.	Cardiovascular disease
E.W.	Neg. Ca.	Alcoholic gastritis
J.P.	Neg. Ca.	Purpura hemorrhagica
M.J.	Neg. Ca.	Tempero mandib abscess
A.M.	Neg. Ca.	Hypertension
E.G.	Pos. Ca.	Ca. of ovary with met. to spine
J.K.	Neg. Ca.	Pruritus
H.D.	Pos. Ca.	Lymphosarcoma
A.C.	Neg. Ca.	Chronic mastoiditis
G.E.	Pos. Ca.	Ca. of oesophagus
M.H.	2* Pos. Ca.	Ca. met. from G. I. tract
P.Mc.	Pos. Ca.	Ca. of stomach
M.F.	Neg. Ca.	Autopsy—Ca.
M.D.	2* Pos. Ca.	Ca. of stomach
I.E.	Pos.Ca.	Hepatic Ca.
M.P.	Neg. Ca.	Myocarditis
D.Mc.	Pos. Ca.	Adenocarcinoma
M.O.	Pos. Ca.	Ca. of stomach
C.S.	Pos. Ca.	Ca. of gall bladder and pancreas
H.D.	Pos. Sa., slight Pos. Ca.	Lymphosarcoma
S.P.	Pos. Ca.	Ca. of stomach
P.C.	Pos. Ca., no test Sa.	Lymphosarcoma of omentum
S.M.	Pos. Ca.	Ca. of stomach
G.K.	Pos. Ca.	Carcinomatosis, cause of death
M.P.	Neg. Ca.	Abscess of tempo-mandib. region
J.F.	Pos. Ca.	Ca. of stomach
M.S.	Pos. Ca.	Metastatic Ca. of skin
W.C.	Neg. Ca.	Pernicious anemia
A.L.	Neg. Ca.	Pulmonary emphysema
W.B.	Pos. Ca.	Ca. of lung
S.V.	Pos. Ca.	Met. Ca.
S.D.	Pos. Ca.	Ca. of cardiac end of stomach
R.P.	Pos. Ca.	Ca. of liver, with met.
J.W.	Pos. Ca.	Epithelioma of tongue
E.F.	Faint susp. Pos. Ca.	Cholesteatoma of right mastoid
M.Mg.	Neg. Ca.	Cholesteatoma of right mastoid
M.K.	Pos. Ca.	Ca. of breast
W.W.	Neg. Ca.	Hepatic cirrhosis
T.S.	Neg. Ca.	Colitis
J.P.	Neg. Ca.	Purpura hemorrhagica
M.Mh.	Neg. Ca.	Mastoiditis
M.F.	Neg. Ca.	Pacchymeningitis cervicalis
M.H.	Pos. Ca.	Met. Ca.
M.Mg.	Neg. Sa., Ca.	Margolius ulcer
F.H.	Pos. Sa.	Glioma
B.H.	Pos. Ca.	Ca. of lung with met. to cervical spine and base of skull
C.S.	Slight Pos. Ca.	Chronic catarrhal appendicitis
M.S.	Neg. Ca.	Asthma
E.Mc.	Pos. Ca.	Epithelioma
E.S.	Pos. Ca.	Epithelioma
Dr.W.	2* Pos. Ca.	Basal cell carcinoma
I.F.	Neg. Ca.	Osteomyelitis
W.W.	Neg. Ca.	Cellulitis
W.R.	Pos. Ca.	Ca. of prostate and stomach
C.I.	Pos. Ca.	Ca. of breast with met. to brain
M.Y.	2* Pos. Ca.	Epithelioma
F.S.	Pos. Ca.	Met. Ca.
M.G.	Pos. Ca.	Rodent ulcer, basal cell Ca.

Thus, it will be seen by this chart that of the authors 76 cases, 16 gave correct negative tests and 58 of 60 possible cases gave correct positive reactions. (One case in question, No. 50 on the list, was a colored woman who presented an extensive ulcerative process in the rectum and sigmoid together with stricture formation.) This means that the combined negative and positive Gruskin tests were proved to be correct in 74 of 76 cases or 97.3 per cent.

The writer is of the opinion that the results in the cases mentioned have been such that the test is worthy of being included in our diagnostic armamentarium. It has the advantage in that it represents a means of very early diagnosis, for we have cases on record in which a positive reaction was shown before any clinical, surgical or roentgenological indications were present.

It is to be admitted that by some observers the results have been somewhat discouraging although at no time has the percentage been less than 75.[16] This we attribute to the failure of strictly observing the contra-indications to the test. It is our feeling, however, that since 800 odd cases of which 500 have been reported by the writer,[3] from the Temple University and Graduate Hospitals of various departments and by different workers (2, 3, 5, 17, 20, 26, 27, 28, 29, 32, 34, 36, 37, 40, 43, 44) have been proved histopathologically to be correct in the vast majority of cases, this should be some index as to its value as a diagnostic aid.

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TESTING HEALTH KNOWLEDGE OF COLLEGE STUDENTS*

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PROBABLY all health workers would agree that education is the foundation stone of public health work. An analysis of the meaning of the word education, however, meets varying points of emphasis. The approach to health education varies with points of view until it becomes a series of problems. Emphasis upon information concerning health matters is the traditional method of hygiene teaching, but the futility and sterility of information alone in determining health behavior has had much recent emphasis. Behavior patterns, desirable attitudes, and ideals, relative to health, are much more desired to insure healthful living.

Whatever may be the relative merit of information in the health promotion program, it cannot fail to have an important part. Certainly ignorance can have no virtue, and intelligent behavior will always have to rest upon appropriate knowledge. Information has an advantage in being at present more subject to measurement and quantitative evaluation. Tests of health knowledge have been best developed for the grade school level, but some effort has been made for the college group. At the eleventh annual meeting of the American Student Health Association, Drs. Scott, Greenough, and De Weese reported detailed studies and others joined them in suggesting desirable co-operative studies.

At the request of a National Association, the health knowledge of college students concerning tuberculosis was determined for over one thousand entering freshmen men at the University of Michigan.[1] Efforts to determine such information soon expanded to include a study of student health knowledge in general. The problems met in knowledge testing are such that it has become a special field in education. As applied to health knowledge the problems increase because of the lack of recognized grades or levels of instruction or achievement. This certainly is true for the college or adult level. The selection of questions, methods of scoring, the form of the test, and many other questions arise in determining the validity of a test for any group. Because of the difficulty of pointing a test for the college group specifically, this test was formulated to determine the knowledge of well informed adults. It was hoped that variations for different groups could be provided for by differences in scores as later determined. After several preliminary steps, a test was formulated of the new form type with true-false, multiple choice, and completion questions, to be answered in 50 minutes. The complete details of the test and results are given elsewhere.[2]

Among the problems of scoring such tests is that of correcting for chance in the true-false type. The method of subtracting the number wrong from the number correct, ignoring the unanswered, seems to be favored. The answer distributions show that in this test the difference method gives results much more like the results of the other parts of the test than the method of using the total correct true-false answers. It was used therefore in determining the total scores as actual correct in the total of 143 questions, and as percentages of that number.

For these over 1,000 selected high school graduates, entering freshmen men, before receiving any college instruction, the scores averaged 39%. This level may be regarded as a good base line for reference in the use of a health knowledge test for other groups. It indicates plenty of room to measure the improvement resulting from college instruction. The average percentage score for the true-false questions was 36 and for the multiple choice 46.

*From the Division of Hygiene and Public Health. FERA help used in tabulations.

*Presented before the American Student Health Association, New York City, December 29, 1934.

†University of Michigan.

TABLE I

Answers by subject. Answers were grouped and counted by subjects as they concerned topics listed, in order of rank.

No. of Questions	Subject	Average Percentages Cor. rect	Incor- rect	Unan- swered
14	Mental hygiene	72	25	3
20	Miscellaneous other	67	29	4
13	Medical care, quackery, self-treatment, etc.	65	32	3
14	Tuberculosis	61	35	4
20	Nutrition and diet	57	31	12
9	Physical exercise and rest	54	44	2
28	Communicable diseases and infections	50	34	16
15	Public health in general	47	33	20
6	Anatomy and physiology	47	30	23
6	First aid	47	51	2
13	Health statistics	45	41	14
8	Sex	35	39	26
	Average	54	35	10

TABLE II

TYPICAL QUESTIONS AND ANSWERS (SELECTED)

TRUE-FALSE

	Answers—Number True	False	Unan- swered
Lack of emotional control is basic in many health and social problems. (T correct)	923	110	11
Vaccination against smallpox is a form of passive immunity. (F correct)	652	361	31
Man is subject to a high degree of parasitism. (T correct)	669	312	59
Testimonials for advertised medicines have been known to appear in newspapers for months after the death of the person who signed the testimonial. (T correct)	828	139	77
Homesickness is a sign that the person has not made the proper transfer from dependence to independence. (T correct)	762	273	10
The phenomenon of human infection as a cause of disease is biologically comparable to the "scale" on a plant, a louse on a bird, or a worm in a dog. (T correct)	564	430	53
Body weight is determined by the total caloric value of food taken in relation to the amount of muscular exercise. (T correct)	524	459	62
The incubation period of a contagious disease is from its height to recovery. (F correct)	178	804	64
A practical method is known by which tuberculosis can be eliminated from our population. (T correct)	342	676	28
Our present birth rate exceeds our death rate. (T correct)	796	224	27
Tuberculosis germs are spread by mosquitoes. (F correct)	52	980	14
Cancer is one of the diseases which has been reduced in frequency. (F correct)	413	618	15

MULTIPLE CHOICE

	Answers —No.
Tuberculosis is primarily—	
A disease of nutrition	283
An infection. (correct)	498
An injury	5
An hereditary disease	242
An emotional disturbance	1
Unanswered	18
Oleomargarine as compared with butter lacks—	
Calories	321
Freedom from disease germs	6
Freedom from poison	12
Vitamines. (correct)	574
Proper color	89
Unanswered	46
The proper first aid for a turned ankle is—	
Walking on it	35
Manipulating it	110
Complete rest and elevation. (correct)	558
Rubbing it with liniment	299
Painting it with iodine	33
Unanswered	18
The pituitary gland is situated—	
Behind the thyroid gland	173
Near the pancreas	103
Above the kidney	74
In the pelvis	82
At the base of the brain. (correct)	362
Unanswered	248
The normal function of perspiration is to—	
Cleanse the skin	28
Oil the skin	3
Get rid of water	35
Eliminate poisons	557
Regulate body heat. (correct)	407
Unanswered	20
True heredity is understood to account for—	
Syphilis	414
Tuberculosis	259
Color blindness. (correct)	209
Smallpox	4
Spinal curvature	63
Unanswered	98

COMPLETION

	Answers— Cor- rect	Incor- rect	Blank
Pasteurization of milk is accomplished by heating it to ( )[1] degrees Fahrenheit for a period of ( )[2] minutes	[1]—108	706	231
	[2]—217	554	275
The general causes of death for all ages are headed by ( )[1] disease	[1]—700	140	206
Sewage spreads disease generally by getting into ( )[1]	[1]—787	109	149

These entering freshmen were almost 100% correct in understanding that emotions are natural to human beings, that devitalized teeth are health hazards, that knowledge of sex is desirable, that breast feeding of infants is better than bottle feeding, that body rest is important in recovery from colds and tuberculosis, that caution in mate selection is important for the health of the next generation, that general good health does not protect against smallpox and typhoid, and, that appearance, taste, or odor do not reveal safety of drinking water.

About 90% understand that iodized salt prevents goiter, that spinach is rich in iron, and that general hygienic living is important in the control of personal tuberculosis. Ninety per cent believe that carbon dioxide increase and oxygen depletion in unventilated rooms are health menaces, that body posture is an important cause of poor health, and that schools should be closed when contagious diseases appear.

Seventy-five per cent list country people as less susceptible to contagious disease, and an equal number know that seminal emissions are normal. Fifty-four per cent would have the person who feels faint get up and go for fresh air.

About 30% indicated that measles is most contagious during the peeling stage, that people are fat because they are unable to burn carbohydrates normally, and that masturbation tends to produce insanity. Thirty per cent would put on cold water as first thing to do to stop bleeding of a common cut, and only 34% would advise following and confining the dog in dog-bite situations. Twenty-eight per cent understand that a positive tuberculin (Mantoux) test means that tuberculosis is or has been present. Sixteen per cent understood that vitamin C prevents scurvy, and only 3% understood an "athletic heart" to be a supposed heart injury which no

one has demonstrated. Thirteen per cent indicated gonorrhoea as the most frequent cause of infant blindness.

The test was applied to 12 smaller non-freshmen groups with increases in scores over the freshmen average of 39%. The increases were, however, not as much as was anticipated for some of the groups tested. The range ran from 44% for a group of upperclassmen electing a general course in hygiene to 63% for a group of graduate nurses in a public health nursing course. The upperclass college group averaged 58% at the end of a three hour semester course. Sophomore medical students entering their hygiene course averaged 62%. One hundred and sixty-one freshmen entering the University of Illinois this year gave an average score of 39% also on the test.

We shall probably continue to study the test and would welcome any use or criticism of the material by others. Perhaps it is not too much to hope that this experience, added to that of others, may be useful in a possible project for the next conference on college hygiene to determine a health knowledge test which may be standardized as to score and used by many for evaluation in programs of adult health teaching. The judgment is emphasized that a plan to develop a single test adjusted to pass the average well informed adult at a score of about 75% would be wiser now than efforts at developing a test for college students primarily. For the present at least such a standardized test would serve the needs of the college situation in particular and would in addition relate the student to the desirably informed citizen.

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WHAT WE HAVE IN COMMON*

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BROOKINGS, S. D.

IN CHOOSING a title as the topic for this discussion, I could think of no theme which might more adequately serve my purpose in directing your attention to a better understanding of the perplexities of life which make all mankind akin; and likewise to present a better understanding of the problems peculiar to our several professions which when properly surveyed by the unbiased mind, or are reviewed by unprejudiced opinion may become the structure upon which to build the bridge across the gap of professional jealousy.

From the earliest dawn of history, human ills and the certainty of death have furnished mankind more insurmountable problems than any other single or combined resistant force except it be the law of gravity. Even here man in his achievements seems to have soared almost to heights beyond the pale of the earths magnetic attraction. Who knows but what ere long a Piccard or someone of greater daring may pierce the stratosphere and speed like a rocket to another orb. We are certain, however, that the task of overcoming the ravages of disease, nay even controlling them, is still far beyond the reach of man.

Profane, historical and scientific writings are replete with man's achievements in the relief of human suffering, yet without malice of forethought, without desire of offense, without purposely withholding praise where praise is due, I make bold to say that not a single achievement thus far recorded may be accredited to a single man or a single profession here represented.

To those of you who may be inclined to challenge this statement I can only sight you the remarkable statement of the renowned Dr. Saleby who said, "No great man stands alone, unique, solitary; necessary though he be, he is yet a social product, the Son of Man and in his voice the immortal yet speak."

The practice of the "Healing Art" seems to have found its inception in our civilization when our ancestors subdivided their labors and assigned certain members of the family, clan or tribe to specific duties connected with their common welfare.

The exercise of charm, eccentric personality or unusual cunning rather than skill or a fund of knowledge concerning disease marks the success of the early practitioner in the art of healing. There is no adequate standard by which we may properly classify the profession of our ancient brethren, in fact he seems rather to have employed agents, devices, nostrums and quackery that brand him as a "jack of all trades and master of none."

Fortunately, the human mind knows no limitations, and the desire to excel, forever holds wide the door of progress. It was natural, therefore, that the earliest treatment of disease could be effected only by careful observation of the laws of nature assisted by such agents as she might provide.

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In this era we find the origin of the use of crude drugs (Pharmacon-Gr-Medicine). Since drug plants grew in abundance we may easily see why so many were used. A knowledge of their growth and preparation for use resulted in the development of the profession of Pharmacy, their action on the human body, internal medicine, more specifically termed Pharmacology. Specific requirements for relief to local foci of infection developed the surgeon, the dentist and the specialist of our modern day. The nurse seems to have realized her calling through the desire of the physician to develop a skilled attendant to relieve him of the long vigils in lingering ailments.

But what has all this to do with our being here today? Simply this—it should establish beyond a reasonable doubt that whatever may have been the development of customs which now so clearly marks the boundary lines of our professional practices, it is undeniable that the origin, progress and future of ever branch of the "Healing Art" is centered around a single entity "The Patient." It would seem that with as strong a bond of contact as is represented by the patient there must surely be others which should engage our attention.

I trust you will excuse the personal reference but the remainder of this discussion is drawn largely from my own experience of service as a member of our Interprofessional Relations Committee in South Dakota.

When our committee was first formed six years ago it seemed a bit difficult to outline a concrete program of interest to the physicians, dentists and pharmacists alike. Fortunately, the legislature supplied us with a common enemy, and I know of no factor which so closely unites the members of a discordant family so quickly as to have the neighbors attempt to settle the family feud. The enemy came in the person of a bill which in effect would have established a state system of medical, dental and pharmaceutical service. Needless to say, the bill was defeated, but out of this experience there came the organization of a legislative committee composed of members from each profession. We are now able to present a united front against adverse legislation or lend support to measures beneficial to any single group. Official delegates are exchanged during each convention and on some occasions part of the official program is given over to a representative from a sister profession.

The quality, preparation and dosage of remedial agents is of common interest to all of us and as a member of the present U. S. P. Revision Committee, I should like to direct your attention to the value of a thorough knowledge of what the U. S. P. means to the successful practice of our several professions.

The fact that the U. S. P. and N. F. are of as great importance to the physician and dentist as to the pharmacist is found in the statement of Dr. Reed Hunt, president of the last U. S. P. convention when he said "of the 365 items found in 'Useful Drugs' a guide prepared by physicians for their own use, only 17 are not U. S. P. or N. F." There are, of course, many valuable remedial agents, which, by reason of patient right, can not be included in the text of either of these officially standardized classifications of therapeutic agents.

However, I wish to cite an example of what the use of a non-U. S. P. item may mean to the physician or dentist, the pharmacist, and the patient.

There are at least 17 firms now marketing digitalis preparations, yet only one firm places any emphasis upon the fact that they are trying to make a U. S. P. item. Unless the physician checks carefully to see that the dose is adjusted to meet the relative value as indicated upon the label the patient either suffers an over-dose or what is clinically nearly as bad, there is little or no digitalization of the heart.

Economically such practices are also unsound. First, because the specialty usually costs from 2 to 3 three times as much as the U. S. P. product. Second, the pharmacist may have to carry from five to ten digitalis preparations, all of which are none too stable if not carefully preserved. The pharmacist's inventory is higher than it should be, the cost to the patient being proportionately increased.

A friendly visit between the pharmacist and physician rather than between the physician and a high pressure detail man will eliminate both of these faults.

A look into the field of glandular products is even more alarming, just listen to these two formulas:

Protonuclein—thyroid, suprarenal, lymphatic, brain, spleen, pancreas, thymus, salivary substances, pepsin and excepients.

Glanditone—Anterior pituitary, fresh, ¼ Gr.; Ovarian substance, fresh, 1 Gr.; Thyroid, fresh, ¼ Gr.; Ext. Nux Vom., 1/20 Gr., and Calferrose, 2 Gr.

When I visited the Executive Committee of the Dental Society, they said, "We don't write prescriptions, all of our drugs are supplied to us from the Dental Supply companies." I believe it is also the practice of many dentists simply to

direct the patient to get a certain mouth wash or similar substance at the drug store, a practice which has two faults.

First, it destroys the confidence of the patient in the service already rendered and second, it starts the patient to thinking he should have gone to the drug store first.

The manufacturers of patent and proprietary products are adept in the art of remodeling old items or imitating the product of another company. This is not true of all pharmaceutical manufactures, in fact there are a number who are striving to uphold ethical standards. A few meetings of this type will easily identify them. A study of formulas will easily identify the products which have definite therapeutic value.

Frequently, I find we are called upon in our School of Pharmacy to render advice concerning this phase of the work and I find Gutman's "Modern Encyclopedia of Drugs" a ready reference. Then there is the question of incompatibility in prescriptions, a condition most often arising through the physician's attempting to prescribe a drug of his choice with a proprietary article. This practice is not in conformity to the pharmacology taught him in the course of his medical training, but rather an attempt to shoot both barrels at one bird.

In our modern-day life, things are happening very rapidly. In the science of medicine and its allied fields, in chemistry, in biology and in nutrition new ways of treatment and prevention of disease are being perfected. In fact, since the epoch making discovery of the use of ether as an anesthetic every eighteen months of research has produced a new therapeutic agent for the relief of human ills.

Whether we be doctor, dentist or pharmacist it behooves us to keep constantly on the alert for information concerning these wonderful discoveries, being mindful of the fact that it was perhaps a pharmacologist, a chemist, or a biologist who produced them and a pharmacist who prepared them for use by the physician or dentist.

Be not too well satisfied with the station which you are now occupying, even though you may have achieved much. Remember that unless the prescription be judiciously written, the ingredients carefully compounded, our common interest, the patient, suffers and the public loses confidence in all of us.

TUBERCULOUS INFECTION RESULTING FROM AN OPEN CASE OF TUBERCULOSIS*

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THE opportunity to study tuberculous infection in a group of individuals before and after contact with an open case of pulmonary tuberculosis rarely presents itself.

This report concerns a girl in her senior year of college who lived in a sorority house with eighteen other girls. During the course of three months (December, 1934 through February, 1935) before consulting a physician, she had noted a persistent cough. On examination she was found to be suffering from far advanced pulmonary tuberculosis, and her sputum contained many tubercle bacilli.

Since all newly enrolled students, beginning with the fall class of 1933, have received the tuberculin test, the opportunity was presented to observe formerly known negatives. At the first test either 0.1 mg. of Old Tuberculin Saranac Laboratory or 0.0002 mg. of the Purified Protein Derivative of Seibert and Long is given. If at the end of 48 hours no reaction has occurred, the procedure is repeated using 1 mg. O.T. or 0.005 mg. of the P.P.D.

On checking records it was found that of the 15 girls who reported for the tuberculin test, 11 had formerly been negative. Eight had been tested in the fall of 1933 and two in the fall of 1934. One received a test in high school in 1932 which was reported negative. Of the 11 known to have been negative, all or 100 per cent showed a positive reaction in March, 1935. Of the four having no previous test, three or 75 per cent were positive. The one individual showing a negative test stated that she had lived in the house for only two weeks, and this short contact probably explains her escape from infection. Of the 15 tested, 14 or 93.3 per cent showed a positive reaction. This compares with a percentage of approximately 25 per cent found in the entire student body.

That an open case of pulmonary tuberculosis is highly infectious to other members of a household seems to be clearly demonstrated by this study.

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THE ABDOMINAL SYMPTOMS OF CARDIAC DISEASE*

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MINNEAPOLIS

THE mimicry of gastro-intestinal disease by disturbances entirely outside the gastro-intestinal tract is a matter of common knowledge. The explanations for this may vary greatly: to the proximity of organs, to toxic agents or infections in the blood stream, to circulatory disturbances due to cardiac disease, to the stimulation of nerve centers which supply a number of organs. Much has been done by physiologists to explain the neuro-muscular mechanism of the viscera which we know is under the control of the psyche. This knowledge helps to explain the large number of digestive neuroses which are purely psychogenic in origin.

Reference of the symptoms of pulmonary disease to the abdomen often occurs. Patients with early tuberculosis consult the gastro-enterologist complaining of gas, nausea, loss of appetite and often a feeling of discomfort in the upper abdomen which may simulate organic disease of the stomach. The onset of acute upper respiratory infections, particularly in children, often mimic appendicitis or other abdominal inflammations so accurately that operations have been performed only to find a negative abdomen, and later the diagnosis is made clear when intra-pulmonary, pleuritic, or mediastinal inflammations become apparent.

So, likewise in cardio-vascular disease we not infrequently find symptoms entirely abdominal. In a recent paper Thos. R. Brown quotes a favorite aphorism of Dr. Osler, "When a patient comes in complaining of palpitation of the heart, think of nervous dyspepsia; but when he comes with vague gastric symptoms, think of early heart trouble." There is much wisdom in this aphorism.

The earliest symptoms of heart disease in the middle aged or obese patient, with or without hypertension, are often flatulence, fullness in the stomach, eructations, some little disturbance after meals and often slight epigastric discomfort. Many of these patients may be entirely relieved of their symptoms by small doses of digitalis and modification of their exercise. A careful examination of these patients will reveal clinically some modifications of the heart sounds, breathlessness on fairly moderate exertion, irregularity after exercise, or slight pitting of the extremities, or unexplainable coughs. More careful examination will show x-ray evidence of changes in the configuration of the heart and in many cases recognizable electro-cardiographic abnormalities. Similar symptoms may also be the only complaint made by a patient with chronic valvular heart disease with beginning decompensation.

In a more advanced stage of decompensation where there is some failure of the right heart, one often gets a history of pain in the upper right quadrant explainable by engorged liver. There is often a feeling of heaviness and sometimes actual pain which may simulate gall bladder disease. The liver can usually be palpated. With rest alone the pain may entirely disappear with decrease in the size of the liver. Digitalis may also be necessary.

The following case illustrates this diagnostic point:

Mrs. U. Female, age 65. Previous health excellent. Went to hospital with minor bruises following an automobile accident. While in the hospital developed severe upper right quadrant pain suggesting a gall-stone attack. On examination blood pressure was rather low, heart sounds were distant, she had a definitely palpable liver and some tenderness over the liver region, operation not advised. Some months later she had a transient hemiplegia and a short time later died suddenly from what was apparently coronary occlusion. There was not autopsy. *Final diagnosis:* Beginning cardiac failure with symptoms simulating gall-bladder disease. Death later from coronary thrombosis.

As shown by King and others, enlargement and tenderness of the liver is much more frequently encountered in cases of mitral stenosis than in other forms of heart disease although it does occur and is found in hypertension, and is, according to King, probably a partial protection of the patient against pulmonary edema. Morrison feels that at least 13 per cent of the cases of coronary sclerosis may be confused with abdominal conditions. In the old days cases of coronary thrombosis were considered acute indigestion. Today this mistake is not made where the pain is thoracic and radiates in the classical way either to the right or left arm. Where the pain is entirely abdominal mistakes are often made. This may be illustrated by a case recently seen:

E. P. K. Male, age 59. Walked into my office complaining of violent pain in his upper abdomen. There was no characteristic radiation. Patient was very pale, in a cold perspiration, and it took ¼ grain of morphine to relieve him. He was sent to the hospital, where he developed a temperature of 99.6, leucocytosis of 12,000, and

*Presented at the annual meeting of the South Dakota State Medical Association, Pierre, S. D., May 14, 1935.
†Prof., Medicine, University of Minnesota Medical School.

the electro-cardiogram suggested coronary thrombosis. His pain disappeared, in three weeks he was up and in a month he was back to work and has been apparently well since. He stated that seven years before he had an identical attack which was diagnosed acute indigestion but he continued to do his work with recurring attacks of pain for a month or so afterwards. Undoubtedly he had on both occasions a thrombosis of one of the smaller coronary branches without large infarction. *Diagnosis:* Coronary thrombosis.

A second case illustrating this same point is as follows: *F. E. S.* Male, age 43. Father died of coronary thrombosis. March, 1930, referred to me because of gastro-intestinal symptoms. General health before this had been good. He complained of saliva and froth coming up in his month. Cannot eat much. Stomach pains mostly in right side, low down. Relieved somewhat by milk of magnesia. Lost 10 to 14 pounds. Blood pressure was normal. Left ventricular type of heart. Gastro-intestinal examination negative. Appendix was removed, pathologist reported it to be long, retro-cecal, benign. In August, 1930, I saw him again. He was still complaining of the same type of gastric symptoms and of the hot weather. No appetite, nausea and vomiting in the morning. Soft systolic murmur over the base, white count 10,500. Nothing organic found. He continued to have these abdominal symptoms during the winter and the following spring. On June 12, 1931 he had an attack of severe chest and upper abdominal pain with vomiting and died immediately. No postmortem. *Diagnosis:* Coronary sclerosis. Coronary occlusion.

Another type of heart case is the one with attacks of pain confined to the epigastrium, relieved by morphine, and diagnosed gall-bladder attacks because the gall-bladder may not empty properly or may actually show shadows. These attacks may recur over a considerable period of time. The following cases illustrate this point:

Mrs. S. B. Female, age 77. Seen in June, 1933. Complaining of attacks of upper right, abdominal pain. The gall-bladder showed poor filling and emptying. Also complained of rheumatism at times in her right arm. Said she became short of breath, heart beat fast if she hurried and the pain in her upper abdomen was made worse on exertion or after a heavy meal. Blood pressure 160/95. Dyspnea on exertion, heart seems enlarged to the left. No tenderness over the right side where she has her pain. Given nitroglycerine to take with onset of pain. This gave her complete relief. She is still well in May, 1935, has had 6 to 8 severe attacks always relieved by nitroglycerine. *Diagnosis:* Coronary sclerosis with abdominal pain.

C. C. L. Male, age 55. Seen first in 1918. Blood pressure 115/85, pulse, 64. Weight, 220. Trace of albumen; at times dizziness with nausea. In 1919 typical attack of kidney colic and passed a small stone. Five years later, weight 229, blood pressure, 112/80. Complaining of eczema and varicose veins. Heart and lungs always negative. Sept., 1928, typical attack of acute gout. In 1930 began having attacks of epigastric pain, always better with rest, clinically diagnosed gall-bladder attacks. Gall-bladder showed impaired function with dye test. Electro-cardiogram normal at this time. No tenderness over the gall-bladder, no enlargement of liver. Blood pressure always below 130/80. October 16, 1931, returned from South. Had had several acute so-called gall-bladder attacks. Weight 214, pulse 58. General physical examination negative. No trouble with heart, never any chest pains. About one month later had an acute attack of epigastric pain. This attack was considered a gall-bladder attack by his local physician. In bed for one week. One week after the attack he was sitting at breakfast table after eating a hearty breakfast when he suddenly fell over dead. No postmortem. *Diagnosis:* Coronary occlusion—Myomalacia, rupture of the ventricle.

Another type of case is illustrated by the one reported by John Finney. The patient was taken ill with violent epigastric pain, abdominal rigidity, leucocytosis and fairly high temperature, and a diagnosis of perforated duodenal ulcer was made. At autopsy there was a ruptured ventricle in an area of recent infarction with an entirely negative abdomen. Salzmann and Burns have described a number of similar cases.

Still another type is the chronic hypertensive with beginning decompensation who develops sudden pain in the left upper abdomen, in the chest, or the symptoms may be in the brain, or extremities, without any characteristic localizing heart symptoms. The following case illustrates this type very well:

J. C. J. Male, age 64. Vigorous man with a history of hypertension. Following a strenuous argument over politics he was seized with a sudden attack of weakness, shortness of breath, and had to be carried home. Two days later he developed very severe pain in the left upper abdomen. Pulse was rather weak and irregular, he had about two degrees of temperature, complained it hurt on his left side low down on deep breath-

ing. Spleen could not be palpated, left rectus muscle very rigid. This pain subsided. One week later he had sudden terrific pains in both legs. The local doctor said both legs were white when he first saw him. The color in the right returned. Later pain localized in the left leg, and at the time I saw him he had a very definite line of demarcation below the left knee with beginning gangrene. He died a few days later. No post mortem. At no time was there any characteristic pain in the chest. This embolus apparently rode on the bifurcation of the iliacs and then passed down into the left leg. *Diagnosis:* Coronary thrombosis, mural thrombi with splenic infarction and later embolism to left leg resulting in gangrene of the leg.

Again we see the onset of a general breakdown ushered in by a tremendous hemorrhage in the gastro-intestinal tract. This is illustrated very well by the following two cases:

R. J. E. Male, age 56. First seen in 1924. At that time he was complaining of dizziness on stooping over and raising up. He was also complaining of gas in his stomach at night for a couple of weeks. He was in very active business, was going at high speed. Aside from these minor complaints was feeling perfectly well. He was playing 18 holes of golf a day. Blood pressure was 205/105. Said it was 160 two years before. There was a trace of albumen in his urine. I gave him the usual advice for a hypertensive, rest and decreased diet. About one mouth later he was brought to the hospital with the story that he ran for a street car, collapsed and had to be helped on the car. He showed very marked pallor. He vomited large amounts of blood on the way to and in the hospital and passed a great deal of blood by bowel. There was never anything found in his gastro-intestinal tract to explain his hemorrhage. He improved somewhat with rest. Blood pressure continued to rise and he later had a complete hemiplegia and loss of memory with a complete breakdown and died four years later. *Diagnosis:* Chronic hypertension, hypertensive heart, cerebral arteriosclerosis, hemorrhage from gastro-intestinal tract.

W. H. Male, age 74. History of chronic asthma for many years. Recurring winter infections of the antrum. No stomach trouble. Always a hearty eater and enjoyed every kind of food without discomfort. February, 1932, following more or less unpleasant feelings for a week or so he had a very large hemorrhage from the bowel. Blood pressure following the hemorrhage was 130/70, hemoglobin 35 per cent, RBC 2,750,000. Repeated gastro-intestinal examination was entirely negative for any organic trouble. His blood pressure gradually increased as high as 230/140. He had persistent headaches and his kidneys showed marked damage. April 1, 1935 he had a second large gastric hemorrhage without any gastro-intestinal symptoms and his blood pressure dropped to 110/70. Has gradually come back to 165/110. His kidney condition is not improving. Electro-cardiogram shows evidences of myocardial damage. X-ray shows left ventricular hypertrophy. *Diagnosis:* Chronic hypertension, hypertensive nephritis, gastric hemorrhage.

Another very interesting group is that of cases with chronic recurring rheumatic attacks and valvular disease which have abdominal symptoms simulating acute appendicitis so closely that operation has been performed, the appendix however, being found normal. The following two cases are of unusual interest and illustrate this group:

R. C. McP. Male, age 40. History of rheumatism with an endocarditis in the army. Duration three months. Later declared entirely normal as far as his heart was concerned. June 18, 1934 he developed pain in right lower quadrant and tenderness, nausea and some vomiting. He was seen by a surgeon who found a degree of temperature, white count of 15,500. His heart at that time was thought to be normal. The appendix was removed and found benign. His leucocytosis continued and he continued to have sweats and general weakness, lost weight, ran a little temperature, developed a mild secondary anemia and by September had an aching feeling all over with pain in the right shoulder. The following January, he developed fever up to 103, pains in his right shoulder, a very definite blowing heart murmur with a heart that seemed somewhat dilated. Diagnosis of rheumatic endocarditis was made. He was kept in bed for a month and then let up very gradually and apparently recovered completely. His leucocytes gradually went down to normal limits. His heart murmur is present only after exercise. *Diagnosis:* Subacute rheumatism and endocarditis with abdominal symptoms simulating appendicitis.

C. Mc. Female, age 18. Previous history, five years before, of inflammatory rheumatism with rheumatic endocarditis. Recovery with mitral damage. On February 25, 1935 brought to the hospital with severe right lower abdominal pain which had been present at intervals for three months. Fever of 101 to 102, white count 19,800. There was definite rigidity and tenderness in the right lower abdomen. She had a loud mitral murmur and enlarged heart, also some joint pains.

which had been noted by the physician before the onset. Surgical diagnosis—appendiceal abscess or ileitis with perforation. She was operated on and a benign appendix was found. Her fever and leucocytosis continued. She developed arthritic pains and small amount of fluid in both pleura. Heart showed evidence of dilatation and a definite diagnosis of endocarditis was made. Temperature gradually came down and one month later white count was 10,000. *Diagnosis:* General subacute arthritis with a recurring endocarditis from which she is now apparently recovering. Rheumatism and endocarditis with abdominal symptoms simulating appendicitis.

I have confined myself in this paper to a discussion of the abdominal symptoms which may complicate the diagnosis of a real cardiac condition. A few illustrative cases are briefly discribed.

It is imperative that we seriously consider the possibilities of heart disease in all upper abdominal conditions, particularly in the patient of middle age. This means a careful and painstaking physical examination, the taking of a careful history, the electro-cardiogram, the fluoroscope, and the six foot plate should always be used in doubtful cases.

Summary

1. Onset of mild cardiac decompensation characterized by vague symptoms of dyspepsia and unless one is on guard one may overlook the true basis of the complaint. Namely beginning myocardial failure.

2. More severe decompensation, more frequent in mitral disease but also found in beginning heart failure due to other causes, where there may be pains in the right upper quadrant due to engorgement of the liver simulating gall-bladder disease.

3. In angina pectoris the attack may be purely abdominal and simulate gall-bladder disease particularly, and later coronary thrombosis may occur with no thoracic pain. In cases of coronary thrombosis with large infarction and rupture of the ventricle we may have the clinical picture of a perforating ulcer.

4. We may have massive gastro-intestinal hemorrhage on a purely cardio-vascular basis.

5. Cases with abdominal symptoms characteristic of acute appendicitis and later proved to be rheumatism with vavular disease.

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BOOK NOTICE

A FASCINATING ERA IN MEDICINE

The Story of Medicine in the Middle Ages, by DAVID RIESMAN, M.D., Sc.D., professor of the history of medicine and professor emeritus of clinical medicine in the University of Pennsylvania; first edition, heavy cloth, 402 pages, illustrated throughout; New York: Paul B. Hoeber, Inc.: 1935. Price, $5.00.

It is the belief of Professor RIESMAN that most people know more about Greek and Roman lives and times than they do about the pre-Renaissance period in world history incorrectly known to us as the Dark Ages. Such also is the belief of this reviewer. It is incumbent, therefore, to say that Dr. RIESMAN has rendered medicine a distinct service by confining his latest work to this period in the history of medicine.

Not the least interesting in this volume is RIESMAN'S revelations of the part played by the monks and schoolmen during this somnolent era in human progress. Herein it is detailed how large a part Ireland played in sending forth such savants as SAINT GALLUS and SAINT COLUMBAN, who, although not physicians themselves, yet founded monasteries or convents which later offered up bountiful contributions to medicine as practical training schools for novice physicians of the time.

Here, too, we see the part played by Arabian physicians in the development of modern medicine, and the interrelation between scholasticism and medicine. There is a fine section on the universities (Padua, Paris, Oxford, Cambridge, Salerno, *etc.*), and there is a good part given to what FIELDING GARRISON once called "the chief glory of medieval medicine"—the organization of hospitals and nursing.

Beautifully illustrated, and admirably printed, like most HOEBER books, this volume can be read by the physician with as much pure entertainment as the very real value to be taken from it.

The
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MINNEAPOLIS, MINN., AUGUST 1, 1935

THE MONTANA STATE ASSOCIATION

The Fifty-seventh Annual Meeting of the Medical Association of Montana conducted in Helena, July 2 and 3, showed that the officers and members of the association are not only keeping their own organization in the front line, but also contributing their part to the welfare of the American Medical Association. It was evident from the papers presented by local physicians, as well as discussions, that there is active participation in the scientific and practical aspects of medicine throughout the state of Montana. The interest of the profession in preventive medicine and public health was manifested by the joint session with the Western Branch of the American Public Health Association on July 2, when members of both groups participated in the program. The State Health Officer, Dr. W. F. Cogswell, was president-elect of the Western Branch which represents eleven of the Western states. Through the efforts of Dr. Cogswell, and other physicians of Montana and of the United States, the Rocky Mountain Laboratory was established at Hamilton, where the famous research work on Rocky Mountain spotted fever has been conducted. It is in this laboratory that vaccines for this disease are prepared and distributed and where much valuable work is being done on the virus, woodticks, and related problems. This unique laboratory is now operated by the United States Public Health Service. It is obvious that the establishment of such an institution merits much credit; therefore, it was particularly fitting that Dr. Cogswell should have become president of the Western Branch of the American Public Health Association at this meeting.

The Montana Academy of Oto-Ophthalmology held its annual session on July 2, with Dr. Frank Burch of St. Paul, Minnesota, as guest speaker. Dr. Burch also addressed the general session of the State Medical Association on July 3. That no one is better qualified than Dr. Burch to address both specialists and general practitioners in this field is widely recognized.

Dr. R. G. Leland of the American Medical Association presented the subject of Medical Economics in such a way as to definitely stimulate the interest of physicians throughout the state.

The physicians of Montana have always provided medical care for the poor, and through their organization, they are now taking an active part in medical relief work.

Dr. C. E. K. Vidal's parlementary ability enabled him as president of the association to conduct business-like sessions which added much to the pleasure of the meeting.

Much credit for the success of this meeting is due to the secretary-treasurer, Dr. E. G. Balsam, who has held this position for many years and who has been untiring in his efforts to perfect a first-class organization. J. A. M.

COMMERCIALISM IN MEDICINE

In these times of stress and strain there is an ever increasing test of the doctors ability to adhere to the ethics of his profession. That is, under the pressure of circumstances he is more likely to view his patients from the point of view of a possible source of income than from the proper point of view of the patients needs. He is more likely to do things *to* the patient than *for* him.

Probably there has never been a time when the ideals of the profession have been put to such a severe test. As Benjamin Franklin said a long time ago, "It is difficult for an empty sack to stand upright." The ideals of the profession are destroyed in proportion to the amount of commercialism, which is permitted to invade it. Some form of State Medicine is likely to supplant the present system if we do not keep our own house clean. To say that the patient "demands" this and that is simply a neat alibi for a type of piracy of which "Morgan the buccaneer" would not be guilty.

R. J. J.

ACUTE ENTERITIS

One of the greatest changes in medical practice during the past few decades has had to do with summer diarrhoeas. Fifty years ago the month of August was a tragic one. What has become of the many cases of "summer complaint," "cholera morbus" and "cholera infantum" that we used to hear so much about? Every physician had several such cases on his hands during the "heated season" and many of them required twice-daily attention over long periods of time. Some of them recovered but many, alas, did not. When diarrhoea and cholera mixtures composed of astringents and opiates were administered, the patient's temperature went up and when they were discontinued, the symptoms recurred with increasing intensity. Those who studied the stools with a certain owl-like wisdom resorted to chalk and other alkaline prescriptions in confused vacilation.

There was always an indefinite, shallow-rooted belief that laxatives might have a favorable action in some of these cases by ridding the alimentary tract of the provoking cause or irritant, but, rarely was there courage enough to give them alone. A favorite prescription for dysentery consisted of epsom salts, laudanum, and camphor water; a dessertspoon after each passage; thus making the administration and time fit like the punishment and crime in a Gilbert and Sullivan opera, hoping that each might perform its selective function although given in conjunction with the other in direct ratio to the recurring frequency of the offense.

After muddling around for another period with frequently irritating intestinal lavage, the early treatment of these cases has become so standardized that intelligent mothers co-operate readily in the imposed starvation so essential to physical and physiological rest after the initial but non-irritating laxative has been administered, and this has probably contributed more than anything else to the reduced mortality.

A. E. H.

SPREAD OF TUBERCULOSIS

Dr. Stiehm's brief and pointed report on tuberculous infection in this issue is a classic. It shows what a high percentage of persons become infected when exposed to an open case of tuberculosis and the high percentage of young adults who are uncontaminated with tubercle bacilli at the beginning of college age. Every clinical case of pulmonary tuberculosis at one time would have shown, with a most careful examination, no evidence of the disease except a positive tuberculin reaction, but if periodic examination could have been made the x-ray film would later have revealed the location of the lesion long before symptoms or abnormal physical signs were present or before tubercle bacilli were present in the sputum. The best control measure, of course, is to prevent infection with tubercle bacilli, but this is impossible in some instances because of the existence of unsuspected cases, such as that reported by Dr. Stiehm. The next step is, to do as he has done, namely, examine all the contacts of open cases and detect those who have been contaminated with bacilli and keep that group of positive tuberculin reactors under careful examination, for this is the group which provides us with the clinical cases of tuberculosis of the future. This and other work which Dr. Stiehm is doing at the University of Wisconsin is striking at the very root of tuberculosis and is today the most promising field, not only from the standpoint of investigation, but also from the standpoint of breaking the vicious cycle of tuberculosis and, thus, controlling the spread of the disease.

J. A. M.

TYPHOID PREVENTION BY INOCULATION

When the dreaded specter of typhoid fever raises its ugly head in our midst, are we going to be content to hide ourselves behind the constituted authority of health officers and sanitarians, valiant soldiers though they be, or are we going to seize the opportunity of doing battle

in the field of preventive immunization that is ours?

Here again is a favorable opening for the man opposed to the invasion of state medicine to do his bit. In the armies of the world where anti-typhoid inoculations are universally administered, the disease is now unknown. A pure and wholesome water supply is rightly to be worked for, and when once obtained it should be jealously guarded against contamination, but after all, the individual who carries within his person the disease-resisting power is alone safe.

The canons of our code of ethics forbid solicitation of business, but no one can be so foolish as to construe this to mean that a physician shall not warn the families of his clientele of approaching danger and how it may be averted. Inoculations are or should be expected of us right now. A. E. H.

SOCIETIES

PROCEEDINGS of MINNESOTA ACADEMY OF MEDICINE

Meeting of May 8, 1935

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The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club, on Wednesday evening, May 8th, 1935. The President, Dr. A. R. Hall, called the meeting to order at 8 p. m. There were 58 members present.

Minutes of the April meeting were read and approved.

Upon ballot, Dr. Louis A. Buie, of Rochester, was elected a candidate for associate membership.

Dr. J. F. Corbett read the following memorial to Dr. Arthur T. Mann, and a motion was carried that this be placed in the permanent records of the Academy and a copy sent to Dr. Mann's family.

Dr. Arthur Teall Mann was born in New York City in 1866, and died on April 15th, 1935. His father, Samuel Rexford Mann, was a man of considerable wealth and it is of interest to know that the father, being free to do what he liked, as an avocation, became an artist and produced some worthy pictures. Dr. Mann's mother, Georgiana Teall Mann, was a woman of strong personality and possessed the ability to develop something worth while in her children, of whom there were four, and, what is more important, to cause them to develop themselves.

An old grey stone house in New York on 24th Street, still standing and today furnishing evidence of its pristine attractiveness, was the home where the family was raised until the death of the father. About 1876 the family went to Rochester, New York, and a little later at the solicitation of Judge Teall removed to Eau Claire. On account of the reputation the University of Minnesota had achieved, Mrs. Mann took her family to Minneapolis in the early eighties. Arthur T. Mann entered the University and received his B.S. degree in 1888. He helped organize the first football team at the University and played on the team. He also played baseball and it was said he never muffed a fly in three years. In addition, as a boy, he loved to sail a boat.

After leaving Minnesota he entered Harvard Medical School and was graduated cum laude in 1896. He served as an intern at Channing Hospital, Brookline, Mass., from 1895-96. From 1896 to 1898 he was house surgeon at Boston City Hospital and continued his medical training as resident at Massachusetts State Hospital from 1898 to 1899. He took postgraduate work in Boston in 1902 and abroad in 1904. He again visited medical centers of Europe in 1914.

After this long training he returned to Minneapolis to practice his profession and served as Assistant in Surgery at the University of Minnesota Medical School from 1899 to 1902. He was instructor from 1902 to 1906; Clinical Professor to 1913 and, from that date, Associate Professor of Surgery to the present time.

He was Chief of Surgical Service at the Minneapolis General Hospital from 1913 to 1922. On that date he relinquished active service to go on the Consulting Staff. He also served on the surgical staff of Northwestern Hospital and Abbott Hospital for a long period of time. He was Surgical Consultant in U. S. Public Health Service from 1919 to 1923, where he did an enormous amount of surgical work on the returned soldiers.

In 1918 to 1919 he served as a Major in the Medical Corps of the U. S. Army, and as Chief Surgeon at Camp Dodge, Iowa.

He was a member of the Hennepin County Medical Society, the Minnesota State Medical Association, a Fellow of the A. M. A., Fellow of the Western Surgical Society, Fellow of the American College of Surgeons, a member of the Minnesota Pathological Society, past-president and member of the Minneapolis Surgical Society, and member (since 1903) of the Minnesota Academy of Medicine. His services as Secretary-Treasurer for 16 years and later as President of Western Surgical Society are remembered by a widely distributed group of surgeons. He served as a Governor of the American College of Surgeons.

In 1904 he married Miss Winona Orff, and at the time of his death they resided at 2437 Park Avenue.

He was a member of the Minneapolis Club, the Woodhill Country Club, and the Lafayette club. He was a golf player and especially enjoyed a game of chess. He particularly excelled at chess and during these games the thoroughness and generosity of his character was revealed in a striking manner. He knew the game, but if his opponent started a false move he would caution him to go slowly.

Probably on account of his English ancestry, he was reserved, self-possessed, determined to carry out his always laudable purposes, courageous to follow his logical way of thinking, confident of his conclusions. He hated exploitation and sham, and aimed to see both medical and other conditions as they really were.

He attended the Presbyterian Church and his con-

scientious performance of all he did is a tribute to his religion.

As a practitioner of his profession, he showed all of the characteristics that have been enumerated in the analysis of his personality. He had been thoroughly grounded in his profession and often from the fundamental facts could develop application to his work that appealed to one who followed his logic based on sound premises.

He was versatile in the range of his work and in a widely spread field showed evidence of thorough grounding and ability to meet new and unsolved problems. His contributions to literature cover many fields of effort. A partial list of these is appended. The rise and development of the Western Surgical Society is probably due in a large measure to his efforts for that organization.

The Minnesota Academy of Medicine mourns the loss of Dr. Mann as a member.

His memory endures. The influence of his sturdy reliance, his integrity and honesty of purpose, manifested by intense application to whatever the task might demand, will inspire our members as long as memory endures.

Signed by the Committee:

HARRY P. RITCHIE,
HORACE NEWHART,
J. F. CORBETT, *Chairman.*

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COMPILED APRIL 25, 1935

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The scientific program was as follows:

LATE RESULTS IN A CASE OF ARTHROPLASTY OF BOTH HIP JOINTS FOR PAINFUL ANKYLOSING ARTHRITIS

ARNOLD SCHWYZER, M.D.
ST. PAUL

Dr. Schwyzer presented the patient whose right hip he had operated 17½ years ago and the left hip 19½ years ago, and gave the following case report:

Mrs. F. C., a farmer's wife, had been an invalid for many years, due to an almost complete and very painful stiffness of both hips in extension and adduction. The pain had become constant and almost unbearable in the past few months. She was unable to walk and every morning her husband had to carry her downstairs and lay her on a couch that she might somewhat supervise the work of the children in the house. She was, of course, unable to sit on account of the rigidity of the hip joints. In the evening she was carried up again and thus day after day was spent in misery.

The general condition of the rather fleshy but well-built person was reasonably good, though the pain had caused marked lines in her face. She was despondent and readily cried. It was evident that she was, however, not of the complaining kind, and that her physical resistance, including her heart, had suffered.

The outer configuration of the hips was not particularly abnormal. The legs were in extension and adduction with outward rotation. The right knee was held crossing the other in front. The *left* hip was the most painful. There was practically no rotation in this joint, no abduction at all, but apparently a few inches of flexion forward. The *right* hip joint had a just barely noticeable rotation, about 15 degrees at best. Anterior elevation of the foot from the bed on this side was about 12 inches. Abduction none. This forward motion made it possible for her to take some small steps when well supported. However, this effort was very painful.

The left hip being the most fixed and the most painful, we decided to operate upon this side first, which was done on December 7, 1915. A large flap with base upward was formed over the trochanter and from its middle a vertical straight downward incision enlarged the wound. With a Gigli saw the greater trochanter was divided and with the tendinous insertions was lifted upward. A large amount of ossified tissue in the capsule and along the edges of the acetabulum was removed, the joint was opened freely, and the head trimmed into shape to move freely in the socket. Repeated dislocation and reduction was executed until the hindrances to free motion were well located and removed. Then a portion of the gluteus minimus and medius with some connective tissue was formed into a pedicled flap

and turned into the acetabulum after the head had been widely dislocated and the posterior parts of the capsule had been well brought to view for trimming by forced outward rotation of the dislocated femur. The flap overlapped the acetabular edge where the capsule had been cut away and thus insured us against a re-forming of a too-tight capsule. The ileo-femoral ligament was left intact as well as feasible. A six-penny nail through the trochanter fixed the latter perfectly, and the wound was closed without drainage. The patient left the hospital on January 22, 1916.

Two years later the patient came back to the hospital. She now wanted the other leg operated upon. This was done on December 18, 1917. By December 24 she could spread the legs actively to a distance of 33 inches between the heels and passively to 38 inches. However, we had apparently been too confident with active and passive motions, and on January 5 (two and one-half weeks after the operation) we had to aspirate a hematoma which had formed. This hematoma is probably the cause of the right hip joint being somewhat less movable than the left one at the present time.

The end result you can read from the photographs. The patient declares that she had absolutely no pain all these years and is very emphatic about this point. Her walk is poor, and she nearly always uses a cane, but she gets upstairs alone and says she is on her feet all day long. On stepping, she can put one heel 19 inches in front of the other one and she can spread her legs to a distance of 23 inches between the heels without any pain.

In one of the photographs you notice a varicose ulcer below the inner malleolus on the left foot. This was treated by an Unna gelatine cast. The patient is not walking so very freely, as she has become rather heavy, having gained 40 pounds.

Addendum: The interposition of a live pedunculated flap of muscle tissue (rather than fascia) had undoubtedly its main value in hindering the re-formation of the thick partly ossified lower and posterior portions of the capsule, which were the main cause of the ankylosis. The flap had its base postero-inferiorly and most probably remained muscular at the acetabular rim (at least partly) long after the flap in the acetabulum had undergone pressure atrophy.

Discussion

Dr. F. R. Wright (Minneapolis): When a man can show a patient after 20 years who was restored from a bed-fast patient to one who can get around on her feet and be a useful citizen, he has really accomplished something.

Dr. Schwyzer (in closing): What Dr. Cole said about interposition of tissue is right. McAusland came out and advised the interposition of fascia some years ago. I had a case of very bad complete ankylosis of the elbow where much bone had to be removed, and there I felt it would not do to put any interposition at all. We started motion the day after operation and got a very good result with considerable mobility.



FIGURE 1
Present condition 19½ years after arthroplasty for ankylosis of left hip.



FIGURE 2
Present condition, 17½ years after arthroplasty of right hip.



FIGURE 3
Extent of painless abduction at present.

THE EVALUATION OF THE TREATMENT OF DUODENAL ULCER

DONALD C. BALFOUR, M.D.
ROCHESTER

Abstract

There probably is no chronic disease which presents such great difficulty in measuring the results of treatment as does duodenal ulcer. The reason for this chiefly is that the disease manifests the widest variations, particularly in regard to character, frequency, and length of attacks. In some cases of duodenal ulcer, permanent healing takes place without any treatment; in others, simple measures of treatment are required; in still others, intensive management is necessary to control the symptoms and to prevent their recurrence; yet, in others, operation is required; and, finally, there are cases in which every known method of treatment fails to prevent recurrence or reactivation.

It is because of the great variability in the course of the disease and in its response to management, that it is not only impossible, but most unfair, to attempt to compare the results of medical and surgical management. Surgical results are based on those cases in which medical treatment has failed because of chronicity, the development of complications, and so forth, so that comparisons are not justifiable. I believe it is unquestionable that medical management has become more efficient in the past few years. This fact, together with the likelihood that the disease is not as serious as it was formerly, probably explains the smaller percentage of patients who apparently require surgical treatment.

In the majority of cases of duodenal ulcer the symptoms or disability are not sufficient to present any difficulties as to management and the patient should be impressed with the importance of so regulating his habits of living that chronicity of the disease can be avoided. In cases of acute perforation, and in cases of chronic obstruction in which symptoms are severe or persistent, the indications for surgical operation are quite clear.

Those cases in which there may be some doubt as to the proper course to follow may be divided into three groups: (1) young patients whose symptoms are marked and recur frequently, and for whom, because of their age, medical treatment is unsatisfactory; (2) those patients who have relatively short attacks of pain, perhaps a week or two of symptoms occurring only once or twice a year, and complete freedom in the intervals; (3) those patients who have the hemorrhagic type of ulcer. This third group presents the most baffling problems in respect to most efficient management. Surgical management should include measures designed to give maximal protection against recurrence of hemorrhage.

The chief problem concerning hemorrhage is in cases of recurrent bleeding, without pain. As a rule, the lesion is small and does not involve the pylorus, which explains the absence of pain. Many such lesions are acute and probably heal rapidly after hemorrhage has occurred. Infection probably plays a prominent part and treatment, therefore, should include thorough elimination of foci of infection.

The indications for the various procedures present a very complicated question, since the age, sex, physical condition, personality of the patient, variability of the lesion, the physiologic effect of the operation, and the skill of the surgeon, must all be taken into consideration. The more chronic the lesion, and the more motility has been impaired, and the older the patient, the clearer is the indication for gastroenterostomy. The contraindications to gastroenterostomy are the indications for those procedures which include removal of the lesion of the duodenum and reconstruction of the outlet of the stomach. Partial gastrectomy should be reserved for those patients who have had such serious bleeding that thorough removal of the first segment of the duodenum is distinctly to their advantage, and for those patients who are suspected of suffering from a high liability to recurrent ulcer.

When surgical treatment is carried out on the basis outlined, the results will show that in cases of chronic duodenal ulcer, in which operation is clearly indicated, from 85 to 90 per cent of the patients can be given complete and permanent relief of symptoms and protection against recurrence of the disease.

Discussion

DR. H. B. ZIMMERMANN (St. Paul): I would like to ask Dr. Balfour how often he sees hemorrhages after surgical procedure such as gastroenterostomy, when probably the ulcer was not bleeding; possibly there was a gastritis and that in itself bleeds. Also, what sort of procedure he would recommend for gastritis with these duodenal ulcers? Also, what type of procedure he would use when he had done a gastroenterostomy for hemorrhage and the hemorrhage is continued? Whether he would do a simple excision or exclusion of the pylorus, or whether he would feel that subtotal gastrectomy would be the operation of choice?

DR. ARNOLD SCHWYZER (St. Paul): Though the subject is, as Dr. Balfour says, timeworn, I think a discussion of it coming from a man like him is very timely. We are in a quandary just now through all these publications on the subject. I am glad that the Doctor still speaks for the simpler operations first. When you see a pin-point ulcer of the duodenum treated by a surgeon resecting the best part of the stomach, it doesn't look quite logical nor quite fair. In my work I find that in gastroenterostomy in the earlier days I had rather better end-results than later, and I have tried to figure how that came about. In the earlier days I had been anxious to get a very good linear closure of the mucosa; that is, after sewing the posterior part of the mucosa I would allow the mucosa of the anterior side to bulge out and sewed practically surface to surface. I read an article written by a German who showed experimentally that when you put mucosa to mucosa with their surfaces together and sew them, they will heal together. The mucosa is thus

everted instead of inverted. When the mucosa is inverted, as most all of us do now, you don't know how much space you have left between the ends and this may be the reason why in the earlier cases I seldom saw a marginal ulcer, but later on have had several. It is, as Dr. Balfour said, an easy thing to cure a marginal ulcer by simply disconnecting the gastroenterostomy. In resecting a posterior duodenal ulcer, as you saw in a number of Dr. Balfour's pictures, you cut through the wall of the duodenum. You open the duodenum, but sometimes it is possible to cut the ulcer away from the underlying tissue before opening the gut. I remember a very large gastric ulcer (about 2½ by 1½ inches in diameter) where without first opening the stomach we shaved off the pancreas which was quite fibrous under the ulcer. We did not have to put on any ligatures because the base under the ulcer had become quite cicatricial. I think that this sometimes would make the procedure a little cleaner.

Dr. A. R. Colvin (St. Paul): I am glad Dr. Balfour paid particular attention to the question of hemorrhage. I read the editorial to which he referred in the A. M. A. Journal and the statement is made that "the average ulcer really doesn't shorten life and that surgery should largely be confined to the complications of ulcer. All that medical or surgical treatment does for ulcer is to bring about a remission of symptoms for a time." The last time Dr. Balfour spoke here on this subject of ulcer, I cited a case where gastroenterostomy had been done 14 years before. This patient came in to see me during a period of 14 years postoperative at least twice a year and each time she came she was more enthusiastic as to how cured she was. At the end of 14 years she nearly bled to death. She had a remission of her symptoms but did not have a cure of her duodenal ulcer. This is in line with the suggestion of the writer of the above editorial, i. e., that we do not cure ulcer.

Of course we do cure ulcer, either by surgical or medical means, because I have seen them. I have operated on stomachs and found healed ulcers, e. g., hour-glass stomachs. If Dr. Balfour seems discouraged about bleeding ulcers, I don't know what we are going to do, for we look to him for a great deal of instruction as to what to do with ulcer of the duodenum. It so happens that at the present time the subject is quite urgent with me for I have three cases in Ancker Hospital. Those three cases have impressed upon me the necessity for individualizing the question of bleeding ulcer, and are cases in which I would like to have Dr. Balfour help us out on.

The first one had a gastroenterostomy done at another hospital. After three years he came to Ancker Hospital with a marginal ulcer which, at operation, was found to have nearly perforated into the colon. The gastroenterostomy was undone and a jejunostomy made, by which he was fed for two months. Again he was much relieved, but was admitted within a year for massive hemorrhage. Knowing the difficulties which would be met in exposing his duodenum after his previous operations, it was felt that in his condition of extreme anemia there were more chances in trusting to a cessation of the hemorrhage. Autopsy confirmed the opinion as to the difficulties which would have been encountered, and it was found that he had a large ulcer extending into the pancreas in the base of which was an open vessel.

The second case was in a man of 45 who also had had a gastroenterostomy at another hospital and was admitted with a marginal ulcer perforating the colon. The gastroenterostomy was undone; he remained well for a time, and then returned because of pain unrelieved by medical care. It was found that a direct attack on the ulcer would have been too formidable a procedure; so the stomach was divided about 2 inches proximal to the pylorus, the distal portion closed, and a Polya made. His pain was relieved and he left the hospital happy, but returned in four months with a massive hemorrhage. Again knowing the magnitude of any operative procedure to expose the duodenum, surgical inactivity was decided upon, and he has recovered, his hemoglobin is 85 per cent and he is free from pain. The manner of exclusion did not prevent hemorrhage but it has relieved his pain; it is improbable that his ulcer is healed.

The third case, a man of 30, has had two perforations of his duodenal ulcer. At the time of his second perforation he had a gastroenterostomy done. He did well for about two years and then had so much pain that a division of his stomach two inches proximal to the pylorus was done, both ends of the stomach were closed and his old gastroenterostomy opening now served as the outlet to the proximal portion. His pain was entirely relieved and he left the hospital, to return in six months blanched from a massive hemorrhage. Again the difficulty and danger of operative procedure was realized and nothing was done surgically. His hemorrhage has ceased and his hemoglobin is back to 65 per cent.

I have cited these cases in some detail, hoping that Dr. Balfour in his closing discussion will tell us, if possible, the best course to pursue. Should the two who have ceased to bleed be subjected to any further surgery?

Dr. H. P. Ritchie (St. Paul): I wonder if, in many cases, recurrence of symptoms following operation may not be explained on a mechanical basis. There was a time when there was so much debate on procedure, position on stomach, direction of the anastomosis, iso- or anti-peristaltic loop, angulation with rotation, etc. With so many technical factors to be considered, there must be cases of recurrence due to the incomplete operation. When this occurs there obtains the same conditions which produced the original lesion. I think any one doing this work can recite the history of recurrence and repeated operations, going on to a Polya before cure is effected. But I do not believe such experiences indicate the routine use of an operation more extensive than the gastroenterostomy. This operation, as so well illustrated here, is quite well

standardized and I believe that Dr. Balfour's comparative statistics indicate the use of the simple procedure as a primary step in the surgical cure of duodenal ulcer.

Dr. L. C. Bacon (St. Paul): A few years back it was my privilege to spend some time with Mr. Walton in the London Hospital and, in discussing stomach difficulties of various types, one of his remarks impressed me. He said that his understanding was that the food habits and nutrition on the two sides of the Atlantic were so entirely different, that he wondered if the two peoples should not be guided in their care of these cases by their experience in their own country. It seems to me that Dr. Balfour's statistics would point rather distinctly to the type of procedure we should follow here, in the main.

Dr. Martin Nordland (Minneapolis): I enjoyed Dr. Balfour's presentation of this subject very much and in discussion I wish to emphasize a few points. First, it must be remembered that duodenal ulcer is only a local manifestation of a general physiological change and that the treatment of duodenal ulcer becomes surgical only when complications have developed. Second, when the surgeon is confronted with a complicated case of duodenal ulcer he has a certain definite responsibility. In the presence of recurrent hemorrhage he must first be certain of the source of the hemorrhage. The patient seldom dies with the first bleeding and, therefore, it is not dangerous. Following the second hemorrhage, however, the surgeon's responsibility begins. A second hemorrhage usually means that the bleeding vessel is large. When a second hemorrhage occurs, the surgeon must advise operation even though the roentgenologist reports the absence of a duodenal ulcer. The roentgenologist must not take 100 per cent of the responsibility. Emergency procedures are unsound. The patient must first be put to bed on full diet and iron medication. The patient with an acute anemia is a poor surgical risk, while the individual with a chronic anemia tolerates surgery very well. The time for surgical interference then is not determined by the degree of anemia. Further, the surgeon's responsibility does not end with the operation and the immediate recovery. Complicated cases of duodenal ulcer must be followed for a long period postoperatively and the patient must be taught to cooperate. For good postoperative results the surgeon should never operate upon an undisciplined patient.

Dr. J. A. Johnson (Minneapolis): I enjoyed very much the exhaustive discussion Dr. Balfour presented on stomach surgery. The most troublesome type of case, in my experience, is the patient with severe gastric hemorrhage who is not in condition for surgery, and often the bleeding continues so that such patients drift into a more and more serious condition. I have found the best thing to do in these cases is to put the stomach completely at rest. This is accomplished by introducing a nasal tube attached to a suction apparatus which keeps the stomach empty of blood and gastric secretion. If the bleeding is severe and prolonged I resort to jejunostomy for the purpose of feeding. This can be done under local anesthesia without moving the patient. The stomach is then empty and at rest and nutrition can be kept up almost indefinitely. If necessary, a blood transfusion is resorted to. I am sure this has been a life-saving procedure in a number of cases of this type.

Dr. Balfour (in closing): I appreciate this discussion and have been much interested in the case reports that have been given. They emphasize the fact that the English reports of the seriousness of hemorrhage are not overdrawn. Patients do die of hemorrhage from ulcer, and the cases described illustrate the results of operating on exsanguinated patients. Dr. Johnson's suggestion of jejunostomy is important. If we adhere to general principles and to fundamentals in management, poor results will be kept at a minimum. I fully agree with the doctor who said that the treatment of duodenal ulcer should be individualized.

Walton's statistics and the survey made by the British Medical Association* (*Luff, A. P.: Collective investigation into the after-history of gastroenterostomy. Brit. Jour. Surg., 2: 1074-1078, December 7, 1929.) indicate that in an average of 89.5 per cent satisfactory results may be expected to follow gastroenterostomy for duodenal ulcer if such cases are followed for a period of more than four years subsequent to operation.

The questions which Dr. Zimmermann asked are most interesting. In general, I would say that gastritis, in itself, is not justification for operation. The decision as to what should be done with the patient who has had a gastroenterostomy first necessitates determining the source of the bleeding. I have missed some cases by assuming that the primary lesion was the cause of the bleeding; recurrent hemorrhages subsequently have taken place. I think that in such cases the gastroenterostomy should be taken down. Dr. Colvin's cases illustrate the problem of recurrent hemorrhage. It is probable that the bleeding was from a small superficial jejunal ulcer.

It is confusing to compare medical and surgical results, since the surgeon is asked to deal with a group in which medical treatment has failed. The efficiency of the management of duodenal ulcer depends to a large extent on selection of cases for various methods of treatment, both medical and surgical. The difficulty in establishing any rule of management is well illustrated by the result of a debate* (*Editorial on a Debate on the Treatment of Peptic Ulcer. Lancet, June 9, 1934, Vol. CCXXVI, 1: 1231-1232.) before the Royal College of Physicians of England last year on the motion "that, in the absence of complications, surgical interference in cases of gastric and duodenal ulcer is unnecessary." After prolonged discussion, the vote on the debate ended in a tie: for the motion 70, and against the motion 73.

GRADUATE MEDICAL EDUCATION OF CERTAIN SORTS IN MINNESOTA

RICHARD OLDING BEARD, M.D.
Emeritus Professor, University of Minnesota

A Brief Abstract

(Since the author is under present engagement for the writing of treatises of a much more extended character, and much more inclusive of the history of medical education in Minnesota, than is this particular article; and since the Minnesota Academy of Medicine has invited a brief sketch—brief under its self-protective rules—he is withholding its publication until a later date and is confining himself to this still briefer extract, of which the author may avail himself under the Academy's rules.)

The first of these "certain sorts" of graduate medical teaching, to which this sketch refers, is that conducted by the Minnesota Academy itself and, in lesser degree, by other and similar organizations among their own members. It suggests the names of those Academy members who have most largely contributed to this type of education and who have passed away, leaving behind them those who, still living, are yet making the lives of their associates better for their presence.

The second of these agencies of graduate medical education in Minnesota, which it considers, is impersonated by the perceptors of other times who served their day and generation in their professional offspring and who laid the first foundations of medical education for their followers.

The third and most modern form of graduate medical education which it discusses is found in the more highly organized graduate medical school, or schools, of Minnesota which are distinguished from the undergraduate schools by their formal return to the principle and practice of individual as opposed to group teaching; and by their official award of graduate degrees to their successful students.

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The meeting adjourned.

R. T. LAVAKE, M.D.,
Secretary.

NEWS ITEMS

We extend a most cordial invitation to the secretaries of the different District Societies to send us the reports of their monthly meetings as well as any news items that will be of interest to the profession.

Drs. R. V. and F. M. Jolin, have opened offices for general practice at Grand Rapids, Minn.

Dr. C. R. Drake was honored by being elected president of the Minneapolis board of education.

Dr. and Mrs. O. C. Rathman, Billings, Mont., are spending a several weeks vacation in touring California.

Dr. C. S. Donaldson, Foley, Minn., is taking a three months post-graduate course at the University of Minnesota.

Dr. H. J. Kaufman, a 1935 graduate of the University of Minnesota has decided to locate at Pine River, Minn.

Dr. F. D. Hurd, formerly in practice at Tolley, has moved to Sherwood, N. D., where he will continue general practice.

Dr. Gustav Reudiger, a former professor of pathology at the University of North Dakota, died recently at Pasadena, Calif.

Dr. J. M. Fisher, formerly located at Proctor, has moved to Fergus Falls, Minn., and is now on the staff of the state hospital.

Dr. A. J. Sprang, a recent Marquette University of Milwaukee graduate, has opened offices for general practice at Buhl, Minn.

Dr. C. P. Truog, Lindstrom, Minn., has gone to Europe for a two months vacation, spending the larger part of his time at Vienna.

Dr. I. D. Clark, Fargo, has been appointed to succeed Dr. A. S. Needles, at the state school at Grafton, N. D., who recently resigned.

Dr. Jos. Moses, Jr., formerly of Northfield, has moved to Faribault, Minn., where he will continue his general practice in medicine.

Dr. H. M. Miller, Mobridge, S. D., died on July 5, the result of a paralytic stroke. Dr. Miller was very active in his work in medical and Legion circles.

Dr. Charles J. McDonald has recently opened offices for general practice at Sioux Falls, S. D. Dr. McDonald is a graduate of Creighton University.

Dr. H. A. Burns, superintendent of the state tuberculosis sanatorium at Ah-Gwah-Ching, Minn., was elected a member of the local school board of that city.

A new nurses home and hospital is under construction at Rapid City, S. D. at a cost of $35,000. The building will be three stories high, and modern in all details.

Dr. Edwin H. Smith, well known in northern Minnesota medical circles, died at his home in Bemidji, after a two-weeks illness of pneumonia at the age of 59 years.

The Todd County Medical Society recently extended a complimentary dinner to Dr. W. W. Will, the newly elected president of the Minnesota State Medical Association.

Dr. B. Pearson, Taylors Falls, Minn., has moved to New Orleans, where he has been appointed assistant professor of pathology at the Louisiana State University.

Dr. Russell Bates, who has been on the staff of the Northwestern Clinic at Minot, N. D. for several years, will locate at Santa Barbara, California, early in September.

The new $250,000 Indian tuberculosis hospital constructed by the federal government adjacent to the state hospital at Walker was opened for tuberculous Indians last month.

Ray M. Amberg, St. Paul, a graduate of the University of Minnesota in 1922, has been named to succeed Dr. Halbert Dunn, as director of hospitals at the University of Minnesota.

Dr. A. M. Hanson, Faribault, was awarded a gold medal by the Minnesota State Medical Association for his exhibit of the biological effects of the growth extract which he has discovered.

Carlton, Brainerd, Grand Rapids, Hibbing and Virginia, Minn., are all working hard and anxious to secure the location of the $1,200,000 hospital that will be located in one of these cities.

Doctors, dentists and druggists held a joint meeting at Highmore, S. D., last month, and organized an association for the purpose of extending better service to the general public.

Dr. G. R. Walters, recently appointed resident physician for the members of the Yankton Sioux Indian tribe on this reservation, has arrived at Greenwood where he has established headquarters.

A fine program of sports following a chicken dinner was the leading feature of the July meeting of the members of the Seventh District Medical Society, which was held at Elmwood Park, Sioux Falls.

At the annual meeting of the National Tuberculosis Association, held at Saranac Lake, Dr. E. S. Mariette, superintendent of Glen Lake Sanatorium was elected a member of the Executive Committee.

Thirty-nine German physicians, many accompanied by their wives, arrived at Rochester this month to attend a series of surgical clinics, presented in various hospitals by Mayo clinic physicians and surgeons.

Infantile paralysis in Minnesota for 1935 has shown an increase in the state over the first half of 1934. But the increase, while marked, shows no epidemic proportions, so report authorities of the State Board of Health.

More than 75 physicians were in attendance at the summer meeting of the Upper Mississippi Medical Society, held at Walker, Minn., on July 20th. Discussions of scientific subjects were the leading feature of the meeting.

Dr. Albert C. Broders, active at the Mayo clinic for 23 years as a pathologist, has accepted the position of professor of surgical pathology and director of cancer research at Medical College, Richmond, Va., his alma mater.

Sixteen Twin City hospitals have banded together in a plan to lower the cost of hospital care by means of a group hospitalization plan. Nine Minneapolis and seven St. Paul hospitals combined to form the Minnesota Hospital Service Association.

At the annual meeting of the Minnesota Radiological Society held at Minneapolis last month, officers for the coming year were elected as follows: Dr. Eugene Leddy, Rochester, president; Dr. J. R. Aurelius, St. Paul, vice-president, and Dr. Leo. G. Rigler, Minneapolis, secretary.

A new series of health broadcasts, dealing with the prevention of tuberculosis, is being presented over WTCN, it was announced by Dr. F. A. Erb, president of the Hennepin County Tuberculosis Association. The series will take the radio audience on Friday afternoon at 1:40 each week.

To study together, graduate together and then to start work together in a new field, is the experience of Doctors Edward and Dorothybelle Kaufman, who recently completed courses at the University of Minnesota, taking degrees as doctors of medicine. They have now gone to California, their future home.

For the first time superintendents of all the state institutions held their quarterly conference at the state sanatorium at Ah-Gwah-Ching, Minn., in connection with the annual summer business meeting of the State Board of Control members. The group was entertained by Dr. H. A. Burns and the sanatorium staff during the meeting.

New officers of the Woman's Auxiliary of the Minnesota State Medical Association are: Mrs. F. J. Ellis, Duluth, president; Mrs. E. M.

Hammes, St. Paul, president-elect; Mrs. J. F. Norman, Crookston, first vice-pesident; Mrs. W. B. Roberts, Minneapolis, second vice-president; Mrs. B. R. Karn, Ortonville, third vice-president, and Mrs. A. C. Baker, Fergus Falls, secretary.

Hans Nelson, the Minneapolis man whose loss of 10½ inches of height in 10 years drew attention of the country's scientists, is doing nicely following an operation by which surgeons hope to check his strange malady. The operation was for removal of the parathyroid gland. His physicians believe over-activity of the gland was causing loss of height by draining calcium from his bones.

The Minnesota State Medical Association broadcasts weekly at 11:15 A. M. every Tuesday over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters.) William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota is the speaker. The program for the month of August will be as follows: August 6, "Getting Ready for School"; August 13, "Shingles"; August 20, "Diet and Health"; August 27, "Carbuncles."

Dr. M. G. Gillespie, chairman of program committee, and Dr. F. H. Magney, chairman of committee on arrangements of the Northern Minnesota Medical Association at Duluth on July 12 and 13, have prepared a fine scientific and outing program for the doctors and their wives. Arrange to attend this meeting and enjoy an outing at an ideal time, and note what is in store for you on the Canadian Steamship Noronic on Tuesday. The cost of this boat trip, including five course luncheon, will be two dollars per person.

Eighteen candidates were granted licenses to practice medicine and surgery in North Dakota following written, oral and practical examinations: Raymond T. O'Neil, Cloteau, Mont.; Arnold J. Gumper, Dickinson; Gerald W. Hunter, Fargo; Victor D. Ferguson, Gackle; George S. Cabot, John C. Fitzpatrick, John F. Regan and Richard D. Niederling, Jamestown; Willis B. Shepard, Linton; Michael Adamski, Mandan; Fred R. Erenfeld, Ralph E. Dyson, Max T. Lampert, Clare V. Lawton and Lewis H. Kermott, Minot; Harold A. La Fleur, Portland; G. Alfred Dodds, San Haven, and William R. Storer, Starkweather.

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Literature with complete description will be sent upon request.

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LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS ON JULY 6, 1935

BY EXAMINATION

(June Examination)

Name	School	Address
Adams, Marvin Edward	U. of Minn., M.B., 1934	Box 464, Minneapolis, Minn.
Anderson, Edward Marvin	U. of Minn., M.B., 1934	Sleepy Eye, Minn.
Anderson, Oliver Wendell	U. of Minn., M.B., 1935	317 Union St. S. E., Minneapolis, Minn.
Baker, Russell Lowell	U. of Minn., M.B., 1934	Hayfield, Minn.
Barr, Robert Neff	U. of Minn., M.B., 1929, M.D., 1930	State Dept. of Health, U. of Minn. Campus, Minneapolis, Minn.
Bergh, George Sverdrup	U. of Minn., M.B., 1932, M.D., 1933	Pioneer Hall, U. of Minn., Minneapolis, Minn.
Black, Earl James	Loyola U., M.D., 1934	Ancker Hospital, St. Paul, Minn.
Brotchner, Robert Jacob	U. of Minn., M.B., 1935	60 S. Milton St., St. Paul, Minn.
Brown, James Wellington	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Burch, Edward Parris, II	Johns Hopkins U., M.D., 1933	Johns Hopkins Hospital, Baltimore, Md.
Clagett, Oscar Theron	U. of Colo., M.D., 1933	Mayo Clinic, Rochester, Minn.
Darden, William Howard	Duke Univ., M.D., 1932	Hastings, Minn.
Eiler, John	U. of Minn., M.B., 1935	1000 Essex St. S. E., Minneapolis, Minn.
Ellinger, George Frederick	U. of Minn., M.B., 1934	University Hospital, Minneapolis, Minn.
Evans, Leslie Mathew	Marquette U., M.D., 1935	Gillette Hospital, St. Paul, Minn.
Grandy, A. Margaret	U. of Minn., M.B., 1934	24 Forest Dale Road, Minneapolis, Minn.
Hanssen, Egil	U. of Minn., M.B., 1933, M.D., 1934	Minneapolis General Hospital, Minneapolis, Minn.
Harlowe, Harold Douglas	U. of Minn., M.B., 1934	1624 Elmwood Ave., Wilmette, Ill.
Havel, Thomas Earl	Creighton U., M.D., 1935	209 W. Elm St., Montgomery, Minn.
Helferty, John Kenneth	Rush Med. Col., M.D., 1934	Tracy, Minn.
Holmberg, Conrad Joel	Rush Med. Col., M.D., 1935	Ortonville, Minn.
Johnson, Malcolm Rossland	U. of Minn., M.B., 1935	622 Van Buren St., N. E., Minneapolis, Minn.
Katz, Louis Jack	U. of Minn., M.B., 1934	158 E. Indiana Ave., St. Paul, Minn.
Kaufman, Herschel J.	U. of Minn., M.B., 1934	4900 Elliot Ave., Minneapolis, Minn.
Kozberg, Oscar	U. of Minn., M.B., 1934	865 Hague Ave., St. Paul, Minn.
Lenarz, Albert Joseph	Marquette U., M.D., 1935	Sauk Rapids, Minn.
Lohmann, John George	U. of Minn., M.B., 1934	University Hospital, Minneapolis, Minn.
Modelevsky, Aaron	U. of Minn., M.B., 1934	907 Ashland Ave., St. Paul, Minn.
Moses, R. Rounce	U. of Minn., M.B., 1934	Kenyon, Minn.
Nelson, Harlan Forest	U. of Minn., M.B., 1935	Lockbox 12, Brooten, Minn.
Paulson, Donald Lowell	U. of Minn., M.B., 1935	678 Aldine St., St. Paul, Minn.
Rozendaal, Hendrik Marinus	U. of Leyden, Netherlands, 1928	Mayo Clinic, Rochester, Minn.
Secord, Eugene William	Yale U., M.D., 1932	Mayo Clinic, Rochester, Minn.
Sibley, William Langley	U. of Virginia, M.D., 1930	Mayo Clinic, Rochester, Minn.
Sjostrom, Lawrence E.	U. of Minn., M.B., 1935	Swedish Hospital, Minneapolis, Minn.
Spang, Anthony Jennings	Marquette U., M.D., 1935	Buhl, Minn.
Strathern, Carleton Schleuder	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Vandersluis, Charles Wilson	U. of Minn., M.B., 1934, M.D., 1935	Bemidji, Minn.
Wasson, Loren Francis	U. of Minn., M.B., 1935	1818 James Ave. S., Minneapolis, Minn.
Williams, Mervyn Morrill	U. of Minn., M.B., 1934	Marshall, Minn.

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Transactions of the North Dakota State Medical Association, 1935

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PROCEEDINGS
of the
HOUSE OF DELEGATES
of the
FORTY-EIGHTH ANNUAL MEETING
of the
NORTH DAKOTA STATE MEDICAL ASSOCIATION

Sunday, May 26, 1935

The first meeting of the House of Delegates was held at the Masonic Temple, Minot, North Dakota, and was called to order at 9:00 P. M., by the president, Dr. C. E. Stackhouse, Bismarck.

ROLL CALL

Secretary Skelsey called the roll and the following Delegates, Councilors and Officers responded:

Murdoch MacGregor, Fargo.
G. F. Drew, Devils Lake.
G. M. Williamson, Grand Forks.
E. M. Ransom, Minot.
N. O. Ramstad, Bismarck.
P. G. Arzt, Jamestown.
L. B. Greene, Edgeley.
E. L. Goss, Carrington.
A. E. Spear, Dickinson.
Rolfe Tainter, Fargo.
Frank I. Darrow, Fargo.
G. W. Toomey, Devils Lake.
P. H. Landry, Walhalla.
P. E. Hoeper, Williston.
R. W. Pence, Minot.
A. R. Sorenson, Minot.
E. A. Pray, Valley City.
H. A. Brandes, Bismarck.
O. T. Benson, Glen Ullin.
F. W. Fergusson, Kulm.
A. P. Nachtwey, Dickinson.
W. H. Cuthbert, Hillsboro.
C. G. Owens, Sheyenne.
A. D. McCannel, Minot.
E. L. Goss, Carrington.
W. W. Wood, Jamestown.
C. E. Stackhouse, Bismarck.
Albert W. Skelsey, Fargo.

The president declared a quorum present and the House duly constituted for the transaction of business.

MINUTES

Secretary Skelsey moved that the minutes of the Forty-seventh Annual Session as published in THE JOURNAL-LANCET, August 15, 1934, be adopted, and the reading of minutes be omitted.

The motion was seconded and unanimously carried.

REPORT OF THE SECRETARY

The Secretary, Dr. A. W. Skelsey, presented the following report:

Membership: Since January 1, 1935, we have payments for 374 members. During the past 12 months we have been paid for 404 physicians, part of this representing some members delinquent at the time of our last annual meeting. Detailed statement attached to this report. Thanks are due to the doctors and also to the activity of the local secretaries.

Various Meetings: President Stackhouse represented us at the special meeting of the House of Delegates A. M. A. in Chicago last February to protest against national health insurance, an unusual procedure to summon such House of Delegates and Trustees between sessions.

At the Northwest Regional Conference held in St. Paul last February, there were in attendance from North Dakota: Drs. H. A. Brandes and L. W. Larson in connection with their duties as Chairmen of two important committees, as well as Secretary Skelsey, Dr. A. D. McCannel and Dr. Kent Darrow.

In December, President Stackhouse held conferences in Fargo with a number of officers and committees to discuss plans for the current year.

Dr. P. H. Burton represented us at the annual sessions of the A. M. A., Cleveland, 1934.

JOURNAL-LANCET: The plan of having special issues at intervals has continued with success. Montana State Medical Association has accepted that publication for its official State magazine.

Some North Dakota Affairs: The State Legislature met during the past winter. There were excitements and uncertainties, with some later developed realities, concerning which your Committee on Public Policy will enlighten you today. There will also be furnished to you by another hard-working committee, that on medical economics, valuable data based on contacts with the Federal and the State Relief Administrators. It is questionable whether all of our members fully appreciate the labor and time freely given by our committees. There are tentative state appropriations for new buildings and equipment granted for the Grafton Hospital for the Feeble-minded; for the State Hospital at Jamestown, and for the San Haven Hospital for the Tuberculous. These were greatly needed on account of decided overcrowding.

It may not be amiss here to record the fact that owing to the lack of unity among doctors

in one of the most prosperous and populous counties in North Dakota, the Commissioners of that County continue their old-time policy of hiring contract doctors at such cheap rates that said County was enabled, at a cost of only several thousand dollars, to float its entire medical care and expense; this as against the expressed request of the majority of the physicians in the medical society of that county that there be adopted the plan suggested by the Federal Administration, and now affective in some of our Dakota counties. The Commissioners' blunt retort amounted to this: (1) That evidently the contract doctors were willing to work, and very hard at that, on the cheap, old-time basis, despite the greatly increased numbers on indigent and unemployed relief; and (2), that the Federal Administration considered said county amply able, by reason of its resources, to take care of itself, including the problem of doctors and medical relief, and would not aid said county until the county in question had proved itself unable to handle the problem financially. A couple of physicians in outlying districts resigned in line with the aim of the medical society, but promptly the county commissioners filled the place with two other doctors, one of whom is not a member of the local medical organization, and the other man is in an adjoining county, yet a member of the local society. We have not yet been notified whether either one or both of the men accepted and retained the positions.

For the benefit of any doctor-historian of this Society who in later years may wish to know how we fared in these very trying years of depression, we here chronicle some of the events nationally about which we are keenly aware, and which are to some extent a continuation of last year's report. We are told that throughout these United States the unemployment runs from twenty to twenty-three millions of people. Despite the ballyhoo of enthusiasts in the theme of that supposedly quick return to normalcy, we remain quite bewildered. Relief plans by the Federal Government, through legislative action via Washington, lately carry an appropriation of almost five billions of dollars. Then too, during the past year there have been developed two striking reports on the subject of social security, one by the Social Security Committee; and another initiated by President Roosevelt, along the same lines, the original plan being that should such latter measure obtain full recognition in Congress, the plans would be carried out by Secretary of Labor Perkins. It seems that this latter plan was being developed, apparently without a reasonable representation of the medical fraternity; hence the A. M. A. requested due recognition, and the request was granted, at least to some extent. The bill known as the Wagner Bill is the result, but it is at present doubtful whether its passage will bring into full action all of the features embodied therein, ranging from health and employment insurance, old age pensions, child and maternity welfare, etc.

In North Dakota, March, 1935, according to the newspapers, thirty-seven and one-half (37.5) per cent of the population were on relief.

Health Insurance: This is a topic that has caused much fire and friction. The A. M. A. called a special session of the Trustees and the national House of Delegates to meet in Chicago, and there promptly passed resolutions condemning such type of insurance. Also, at the annual meeting of the Northwest Regional Conference in St. Paul last February, a similar resolution was adopted, in conformity with that originating in the A. M. A. meeting earlier that month. Yet going into reverse motion, very recently the House of Delegates of the California State Medical Association broke away from its national organization, the A. M. A., so far as this subject goes, and voted in favor of a form of health insurance, very probably on account of the deplorable economic condition in California. While we are well aware that much material on all subjects is now being poured out by the press, we desire to call your attention to the Journal A. M. A. for May 11, 1935, and the Analysis by our National Editor, Dr. Fishbein, in the Journal, May 4, 1935. We have just received the May, 1935 issue of the Survey Graphic which devotes many pages to this subject by laity and doctors, and also gives the resolutions adopted by California referred to above.

Mr. Crownhart, Executive Secretary, Wisconsin State Medical Association, has produced an excellent paper on the subject of compulsory health insurance; also, there has been printed and distributed by several of the State Medical organizations a pamphlet by Gustav Harz, Economist, entitled "Will America Copy Germany's Mistakes?" We have mailed a copy of each of those documents to the secretaries of our local societies.

Over-supply of Physicians: This very lusty subject continues. At the session of the Northwestern Regional Conference mentioned above, one of the topics brought into daylight and calling for a vote, pro or con, was that of unnecessary physicians, obtrusive and omnipresent. There were present enough fatherly physicians

who had in mind embryonic medics in college, or at least some contemplating the medical career, because upon motion, it was voted that *no* restrictions be placed upon the numbers to be graduated, other than those now prescribed by high grade medical colleges. Reference was also pertinently made that this is America, the "Abode of the Free," to choose one's life-calling; neither was omitted reference to the Federal Constitution, the inalienable rights therefrom acquired, etc.

National Pure Food, Drugs, and Cosmetic Bills: Again, at this Federal session, bills were introduced of this nature, including the Copeland-sponsored bill, considerably modified. Of the three major documents, the A. M. A. apparently favored with "reservations" that by Senator Copeland, though it was far from perfect. This latter bill, on April 8, 1935, was returned to the Senate calendar, losing its status. While Senator Copeland, a regular physician, has for several years been active in behalf of this type of legislation, he has also been in publicity due to his radio advertising of certain products. An example of his liberality may here be quoted from the Journal A. M. A., May 11, 1935, and serve to show that even a formerly medical practitioner and erstwhile Commissioner of Health, New York City, seems to be complacent when politics enters the arena. In the National Senate, there was introduced a Bill to provide for the prevention of blindness of infants born in the District of Columbia. Senator Copeland moved the adoption of the following amendment after the word "physician" and the period proposed to insert: "The provisions of this Act shall not be construed to apply to persons treating human ailments by prayer or spiritual means as an exercise of enjoyment of religious freedom."

National Health Conditions: Favorable reports have been received the past year. Some of the statisticians are trying to explain why there has been an upward tendency in the expectation of life during the past few years, especially as it had been predicted that the financial and the economic hardships would work sad havoc with health and life itself. The problem is not yet solved; but judging from the great number of unemployed and dependent people in these United States who though without work or financial means, evidently carry no mental worry nor serious apprehension about today or tomorrow's forecasts—and are content to leave all cares and all bills to Uncle Sam—we can only surmise that such absolute care-free condition is conducive to health and long life.

Cardiac diseases, cancer and diabetes are, of course, among the diseases showing high mortality rates. A pitiful story is that of the 33,000 deaths from automobile accidents. The temperance people loudly proclaim that this tremendous death record is due mainly to the Demon Rum; but we well know that that product is by no means the only cause.

Last annual report of the U. S. Navy shows that venereal diseases occupy second place according to number of admissions (102.45) per thousand, and first for number of sick days (178,523). (Journal A. M. A. April 27, 1935, p. 1534). Thus it would seem as though virtue has been worsted by Venus, plus Bacchus, despite those prophylactic measures and medications suggested some years ago for use both in and out of the navy and the army, and always so readily obtainable from accommodating drug stores and proprietary firms.

Hospitals: In various sections of the country, especially in such congested areas as New York, there are very many hospitals maintaining and enlarging the sphere of their plans for the so-called sick benefit, hospital insurance. A recent news item stated that the New York hospital group were extending the area to a distance of towns within fifty miles of New York City, which plan should cause discrimination against the outlying institutions, and probably end by the latter having to adopt similar plans.

The A. M. A. report on Hospitals shows the annual occupancy of beds by percentages ranging from about 35 per cent up to 70 per cent. Only four states showed a bed occupancy percentage above 70 per cent. The figures do not include hospitals for nervous and mental cases, mainly fully occupied. Census report on latter hospitals shows a total of 488,481 persons.

In addition to the new hospitals being urged for construction by those interested in veterans' work is a request for a 100-bed addition for the Veterans' Hospital in Fargo. How many of the town physicians in Fargo and in North Dakota join in the plea for this latter addition is not of record here.

Narcotics, and Legislation Regarding Same: The A. M. A. Legal Department advised us that the Federal Government contemplated a bill, new and very drastic, concerning the handling, sale and dispensation of narcotics. This Department advised us that federal criticism has been made that some state medical and licensing boards do not promptly suspend nor revoke the licenses of physicians reported to them by the U. S. Bureau of Narcotics, as being narcotic addicts, in the

judgment of the officers of that Bureau; nor revoke the licenses of physicians whom the Bureau alleges have been convicted of violating federal or state narcotic laws. However, there is another side to this problem. As we understand the situation, that even did our State Examining Board deprive a doctor of his or her license to practice, on account of a known violation of the criminal law, or of the law regulating narcotics, and if later said Examining Board were ordered by the North Dakota Attorney General to restore that license, inasmuch as the state had restored the former delinquent his citizenship standing, it is rather evident that the Examining Board would have to comply with the mandate of the attorney general, despite the former stigma of residence by said offending doctor in the penitentiary on account of a criminal offense or the violation of the statute on narcotics. It is rather unfortunate that the national government gives out the impression that our medical profession, as a whole, is not keenly interested in the strict enforcement of laws regulating narcotics. (Georgia State Medical Journal, March, 1935).

Federal Farm for Narcotic Addicts: The National Government has in Lexington, Ky., at an expense of about four million dollars, opened its first farm institution for the treatment of addicts. Accommodates about 1,400 male patients only. It will be a treatment and research center; also furnishes educational and rehabilitation work. Includes custodial features. Volunteer patients will be received, under certain conditions. For regulations governing admission, see Jrl. A. M. A., Feb. 16, 1935. A second farm institution for narcotic addicts will be erected at Fort Worth, Texas.

Sedatives and Other Dangerous or Habit-forming Drugs: Various states are contemplating the passage of laws controlling such drugs, *i. e.*, derivatives of barbituric acid, dintitrophenol, amidopyrene, aspirin, cinchophen, etc. It is stated that a law of this nature is in effect in California, in terms expressed against "habit-forming" drugs. But the law should prohibit the "counter" sale of not alone habit-forming drugs, but also dangerous drugs, a list of which is unnecessary to detail here. Many of the proprietary firms through skillful, high-pressure methods, and also through the potent aid of many physicians and their prescriptions, have only too thoroughly managed to get the public interested in the personal and the frequent purchase of drugs, the sale of which actually should be carefully regulated. Yet one may find, in the smaller towns, and the cities, some retail druggists openly advertising, by inside or by window bulletins, or at least through suggestive counter-inquiry sales talk, drugs which should be prescribed only by physicians.

State Laws Regulating Workmen's Compensation: With the approval of some of the leaders in the medical societies in New York City, New York State is to enact what is termed the Abuse Bill. The title is self-explanatory, and the Bill doubtless has been pushed through on account of that type of work and compensation being handled rather too loosely in that state. The physicians must be registered with the local medical society and approved by the Industrial Commission.

In Georgia, last February, some of the counties passed resolutions declining to accept from the Georgia Emergency Relief Administration the fee of only fifty (50) cents, allowed for physical examinations. Not only did they refuse to accept such bait, but they also put into public print the fact that they think "it is hardly fair to ask the doctors to accept such a pitiful fee, when almost every one else who is working for the government gets a fat salary, and all of us have to pay for it."

Foreign Practitioners: France is considering passage of a law requiring any practitioner wishing to practice medicine there, to first have lived in that country for at least ten (10) years preceding such request. Our national and state examining boards might well bear that fact in mind and also the fact that foreigners are seeking medical licenses in our country. It is claimed that from Germany alone, in the year 1934, probably due to the vicious Hitlerism in Deutschland, 160 doctors came thence into the United States, searching for certification and locations.

Some of the Cults—Osteopaths: The Canadians and the medico-legal people in England have a real system of investigation, when requests are made to them for the recognition of cults desiring to practice the various hobbies upon which many of them are founded, running all the way from the use of a massage roller, aided possibly by a colored electric lamp attached to the usual lighting apparatus, to the more extended practice of medicine, surgery, obstetrics, etc. Recently in Ontario, application was made by the Osteopaths for legal right to practice all the subjects last named. Thereupon a Committee of Two from that government proceeded into some American cities in order to ascertain the relative value of the instructions and the equipments to be found in the various teaching and practicing institutions of that cult. Your particular attention

is now called to the last four or five numbers of the Journal A. M. A., and particularly the issue of April 27, 1935, pp. 1549-1552, which gives an official report to the Congress on Medical Education held in Chicago, February, 1935.

Naturopathy: This is defined in a grandiose way, by such institutions as the First National University of Naturopathy, Newark, N. J.; the Pennsylvania Society of Naturopaths, etc., which will be found entertainingly described in the Bulletin A. M. A., April, 1935.

A reading of the material concerning some of these cults will give you an excellent idea of the work and the perplexities encountered year after year by your Committee on Public Policy.

Surplus Supply of Graduate Nurses: Somewhat along the lines of the meanderings of that five-year National Committee on Medical Economics, so also has a national association of nurses gone throughout these broad and distressed lands of ours, for about eight years, at a stated expense of $283,500.00. It may be wrong for us here to suggest that possibly the essentials of the data obtained from this huge outlay of money and some labor, including correspondence, and now detailed in a book produced by said nurses' association, might have been obtained at very much less expense by taking cross-sections of the country-at-large. Magazines have heard the call for publicity, and in addition, some of the writers for the nurses association have furnished the press with some data like that which follows below:

Since 1900, the United States population increased 62 per cent. In that period, the nurses increased 2,374 per cent, and the number of nurses now being graduated annually equals 25,000. Estimated that there are now about 400,000 graduate nurses. The official report calls attention to two alleged evils: (1) Under-education of nurses, and (2) over-production of nurses; hence it follows that some plan of relief must now be demanded. It is also stated that "the present system of hospital control of nurses is used as a source of cheap labor; hence, ensues mass production of nurses without regard to demand—merely to get student nursing done for keep and $10 per month."

From the literature before us, it appears as though the national association of nurses would like to demand and have enforced the following plan: (a) That only graduate nurses be employed by hospitals; (b) that to enforce such a demand, a very large number of the hospital training schools shall be closed permanently, especially those having less than one hundred (100) beds, and even those having that number of beds, or more, but whose "curriculum" does not measure up completely with the standards to be laid down and enforced by said national board of nurses; (c) that much higher educational requirements be required and enforced, implying that even a university degree is none too high for a woman who aims, after graduation, to nurse the sick, the maimed, the deaf, the blind; (d) that far-reaching national plans be adopted to have enacted in all states, such regulatory and prohibitory laws as may be demanded by said association, along the lines indicated above; together with state supervisors who shall see to the due enforcement of such laws. (This latter action, as well as some of the others outlined, will probably be against the desires or actual consent of many of the hospitals.) In Scribner's Magazine, we are informed by a woman writer that under this proposed plan the public can get, through the nurses' registries, "a careful grading of each nurse's qualification, experience, culture, and personality; that some of the bureaus already in existence supply not only the kind and degree of skill that the doctor requires, but also the kind of person the public desires." Also, we are informed quite confidently that "the public may have the cheerful, the impersonal, the Catholic, the Protestant, the musical, the lively blonde who plays a good game of cards, or the generous, experienced woman who will nurse you and run the house at the same time." As a matter of fact, during many years past, we had supposed such requisites and privileges were always available.

The Canadian National Medical Association will meet in joint sessions with the American Medical Association at Atlantic City, June 10th to 14th, inclusive. As this is an exceptional event, our A. M. A. officials urge a large attendance.

The state secretary will be pleased to mail to those desiring Grassick's "North Dakota Medicine" a copy for $2.25 postpaid.

ALBERT W. SKELSEY.
Secretary.

Dr. Frank I. Darrow moved that the report be accepted.

The motion was seconded by Dr. A. E. Spear. Said motion was duly put and unanimously carried.

The president called for the report of the chairman of the Council, but Dr. L. B. Greene requested that said report be delayed until the next session of the House of Delegates.

Dr. W. W. Wood presented the annual report of the treasurer, which was referred to the Audit-

ing Committee, on the motion of Dr. Pray. Dr. Pence seconded the motion which was duly put and carried.

REPORTS OF COUNCILORS

First District

Cass County Medical Society held eight meetings during the year. Average attendance, thirty; paid membership, sixty. Three new members were added during the year. Two members were removed by death.

The Society was host to the state meeting in Fargo in 1934. The first meeting in October, 1934, was a joint meeting with the Fargo-Moorhead Dental Society and was addressed by Dr. John Lundy, of Mayo Clinic, and by Dr. A. J. Heidbrink, of Minneapolis.

A special meeting was held in May, 1935, for the purpose of giving a hearing to the organization of a Women's Auxiliary to the Society. This subject was presented by Mrs. Martin Nordland, president of the Minnesota Auxiliary, and Mrs. Hesselgrave, of the Ramsey County, Minnesota, Society, a past president of the Minnesota Society, and at the present time director of publicity of the Minnesota Society. Mrs. Nordland spoke of the advantage of auxiliary, and Mrs. Hesselgrave spoke of detail of organization. As a result of this meeting, the Society instructed its delegates to the state meeting to request the House of Delegates to grant permission to organize a state auxiliary, under which unit the local society might request organization.

All other meetings were addressed by the members of the local society. The subjects were varied, instructive and interesting, and were well presented and well received by the Society.

The business portion of such meetings was concerned chiefly with current economic problems touching the Society, one relating to the public health work of the city of Fargo, the other relating to the medical care of the indigent of Cass County. The Society is endeavoring to bring the care of the Cass County indigent under the plan similar to that outlined and suggested by the State Committee on Economics and presented at the state meeting in 1934. A resolution designed to bring about solidarity to that end has been adopted and endorsed by signatures of fifty physicians of Cass County. The Society is endeavoring to have every physician in Cass County sign the resolution in order that the will of the Society might be respected by our county commissioners in outlining their program for the medical care of the indigent for the year 1936.

MURDOCK MACGREGOR, M.D.,
Councilor.

President Stackhouse inquired if any physician in Cass County had refused to sign the resolution, to which Dr. MacGregor responded that about ten had not signed; that he thought they might not have been approached, although all the doctors were aware of the resolution.

Second District

The Devils Lake District Medical Society has had a very encouraging year. We have taken in four new members, lost two by removal and one by death.

We have had four meetings with outside speakers at three of them, all meetings being well attended. We reported 27 members in good standing and 11 non-members, about half of the non-members belonging to other societies, mostly as a matter of convenience. The rest are indifferent to society work. There seems to be no chance to increase the membership and I believe there is a general feeling of satisfaction among the members.

G. F. DREW, M.D.,
Councilor.

Third District

There are 59 members in the Grand Forks District Medical Society, and one honorary member.

Meetings are held monthly beginning in September and closing in April.

During the past year eight meetings were held, guest speakers being: Ross Mitchell, M.D., Winnipeg, Man.; R. E. Scammon, Ph.D., University of Minnesota; E. M. Hammes, M.D., St. Paul; A. Hall, M.D., San Haven; J. S. Parson, M.D., Crookston, Minn.; Wm. T. Peyton, M.D., University of Minnesota; H. A. Brandes, M.D., Bismarck; W. H. Long, M.D., Fargo, N. D., and W. A. Fansler, M.D., Minneapolis.

Each meeting was well attended. An active, energetic group of officers are in charge. The best of good fellowship prevails. An active campaign is in progress to have every active practitioner in the district become a member of the Society.

G. M. WILLIAMSON, M.D.,
Councilor.

Fourth District

Number of members in good standing, sixty.

Number of meetings, nine.

Average attendance, twenty.

Three new members were added during the year.

Six men withdrew from the Society during the year.

Two men have left the state, although maintaining their membership.

With the exception of two summer meetings, held at the picnic grounds of the Minot Country Club, all meetings were held in St. Joseph and Trinity Hospitals and began with a dinner, followed by a scientific program.

E. M. Ransom, M.D.,
Councilor.

Fifth District

The Traill-Steele Society is in a flourishing condition with every eligible man of the territory a member. The membership is twelve.

Three new members have come into the society this year: Dr. J. A. Fowlie, of Hope; Dr. O. G. Bean, of Finley, and Dr. Norman J. Rose, of Finley.

Dr. James M. Gibbons, of Finley, has removed to Bismarck, and Dr. L. J. Bowman, formerly of Hope, to Enderlin.

Three regular meetings have been held, with papers on the following subjects: "Pericarditis," "Tetany," and "Prostatic Hypertrophy." At a special meeting this spring, two visiting clinicians gave addresses respectively on "Cancer of the Breast" and "Cancer of the Cervix."

Present office-holders of the Society are: President, Dr. M. T. Savre, of Northwood; vice-president, Dr. R. C. Little, of Mayville; secretary-treasurer, Dr. Syver Vinje, of Hillsboro, and delegate, Dr. W. H. Cuthbert, of Hillsboro.

In the Sheyenne Valley Society we have a membership of 16. During the year we have acquired two new members: Dr. J. M. Nelson, formerly of Hebron, and Dr. H. K. Helseth, of Wisconsin. Dr. Nelson is located at Valley City and Dr. Helseth at Litchville.

None of our doctors has removed from the territory.

We have had four regular meetings.

At a winter meeting we had the Stutsman County Society as visitors with a program of film presentation on "Fixation of the Kidney" and "Surgical Procedures in Inguinal Hernia."

Other meetings were given over to a discussion of medical economics, autopsies and case reports.

At our annual meeting the following officers were elected: President, Dr. A. C. MacDonald; vice-president, Dr. Fred Brown; secretary-treasurer, Dr. Will H. Moore; delegate, Dr. E. A. Pray, and alternate, Dr. S. A. Zimmerman.

F. L. Wicks, M.D.,
Councilor.

The foregoing report was presented by Dr. E. A. Pray in the absence of Dr. Wicks.

Sixth District

The Sixth District Medical Society has had a successful year. Five regular meetings, with good programs and attendance have been held. At four of the meetings, physicians from outside our district presented papers and we are deeply indebted to the following for their valuable assistance: Drs. Frank Heck, Rochester; A. D. McCannel, Minot; J. F. Hanna, Fargo, and J. D. Carr, Jamestown.

One session was devoted exclusively to cancer of the uterus. A symposium was given by members of the Society who presented papers on its diagnosis, pathology, treatment by radium, deep X-ray and surgery.

During the legislative session, the following senators and representatives attended our meeting and made interesting comments on legislative matters: From the Senate, Dr. E. C. Stucke, Dr. Syver Vinje and Dr. G. F. Drew. From the House, Dr. L. T. Lohrbauer.

At the present time we have 54 members in good standing, with two who have not yet paid their dues.

We have lost by death during the past year two members: Dr. R. W. Hallenberg, of Bismarck, who died following an accident; Dr. W. C. Wolverton, of Linton, who had recently been elected president of our local society. He had always been an active worker and a leader in our profession.

Dr. J. M. Nelson, of Hebron, located in Valley City and his membership has been transferred to the Sheyenne Valley Medical Society.

The following new members have been admitted: Dr. Charles A. Arneson, Bismarck; Dr. George Schatz, Linton, and Dr. H. P. Rosenberger, Bismarck.

The economic stringency has made the practice of medicine more difficult. Chaos regarding fees and remuneration from counties and relief organizations has been prevented by the fine co-operation of the members of our society under the guidance of the State Economic Committee.

There are one or two physicians in our district who have taken advantage of the depression to build up a system of contract practice in several counties, which is contrary to the regulations of the American Medical Association, but most of our members are following the plan recommended by the State Economic Committee.

N. O. Ramstad, M.D.,
Councilor.

Seventh District

We have had a reasonably good year. We have 18 members and have lost two members by death, Dr. C. P. Buzzell, of Cleveland, and Dr. A. A. J. Lang, of Jamestown. We have one other man in the county who is eligible, but for some reason, he doesn't want to pay his dues, so we have dropped him out of the Society.

We have had three successful meetings this year, each one preceded by a dinner, with Dr. Lilly, of Rochester, presenting a paper on diseases of the nose and throat, at one of the meetings. Dr. Hall, of Dunseith, also presented a symposium on the treatment of tuberculosis by pneumothorax.

At the next meeting, Dr. Brandes gave an exhaustive résumé of the workings of the Economic Committee, and following his plan, the county has adopted, and all the doctors have signed up, an agreement to abide by the schedule gotten out by this particular committee. A local committee on economics has had several meetings with the county commissioners, and the county is now working on that basis.

P. G. Arzt, M.D.,
Councilor.

Eighth District

The eighth district, as a whole, has been rather inactive during the past year, but several small but enthusiastic meetings have been held by several of the members. No programs of major importance have been given, but medical economics has certainly been thoroughly well discussed.

L. B. Greene, M.D.,
Councilor.

Ninth District

During the last year we have had four medical meetings. The one on July 13th was held at San Haven, at which there were 28 North Dakota doctors and eight Canadian doctors who participated. The principal subject discussed was "X-ray and Pneumothorax." All had an enjoyable and profitable time.

The membership of our society, the "Tri-County," is not up to what it should be in paid membership. There are now eleven paid members, and six who have not paid or who have not as yet applied for membership.

One of the open subjects for discussion is "Medical Economics," which has never gotten much farther than discussion.

E. L. Goss, M.D.,
Councilor.

Tenth District

As councilor for the Tenth District, I beg to submit the following report:

The Southwestern District Medical Society has had a very successful year and the spirit of co-operation and friendship has contributed to this success.

We have held five meetings during the year, each one being held in a different town. The attendance has been very good, especially when you consider the large territory covered by this district. One regular meeting was called off due to the conditions of the roads.

At our May meeting, the subject was "Cancer of the Breast," as suggested by the chairman of the Committee on Cancer.

For the January meeting, we were pleased to have with us Dr. Brandes, of Bismarck, who gave us a talk on "The FERA Medical Relief Set-up in North Dakota."

We have 29 paid-up members, giving us one hundred per cent membership for the second consecutive year.

A. E. Spear, M.D.,
Councilor.

REPORTS OF COMMITTEES

Committee on Public Policy and Legislation

The report was read before the House of Delegates, and duly accepted.

Committee on Medical Education

Dr. H. E. French, chairman, presented the following report:

Your Committee on Medical Education can report only in terms of other years. Post-graduate instruction to practitioners is something that seems to be conducted satisfactorily in some states through co-operation between the State Medical Society and the Extension Division of the State University, but in North Dakota we have never been able to follow suit.

Popular health education, in the same way, is something in which the State Association seems unable to take an active part except for certain broadcasting on the part of some of the members of the committee. The committee recognizes good popular health educational work on the part of the State Department of Health and the Tuberculosis Association.

The School of Medicine of the University continues on the plan of organization and in the efforts that are well known to you. Its successes in the transfer of students to other schools after the first two years of medical work, the ability of

its students to rate well in clinical schools, and finally before state boards, and the showings made by those of its students who elect to write on Part I of the National Board Examination have continued. Its problems as to numbers seeking admission and as to support on the part of the state are increasingly difficult. The school is soon to be inspected as a part of a large survey being conducted at this time by the Council on Medical Education of the A. M. A. and the Association of American Medical Colleges.

H. E. French, M.D., *Chairman,*
Robt. D. Campbell, M.D.,
W. C. Fawcett, M.D.,
N. O. Ramstad, M.D.

An informal discussion ensued concerning the advisability of the State Association paying the fee for medical students of North Dakota who wished to take the national board examination, the fee amounting to around $80, and the examination being given at the University. Action was deferred on this matter until next year.

NECROLOGY REPORT
1935

The following report was presented:

Dr. G. M. Williamson read the following report, which was prepared by Dr. Grassick:

Bound by ties of fellowship in service and impelled by a sense of duty and devotion, we who remain pay this, our tribute of remembrance to those of our number who since last we met, have passed into that other state where hope holds out for us all the ideals of life, beauty and love.

Robert W. Hallenberg

Dr. R. W. Hallenberg was born in Moorhead, Minn., June, 1905, and died at Bismarck, N. D., August 1, 1934. He received his preliminary education in the schools of his native state and his medical training at the University of North Dakota, and the University of Illinois. He interned in Grant Hospital, Chicago, and for the two years preceding his death was associated with the Roan and Strauss Clinic, of Bismarck, N. D. His untimely death resulted from injuries received in an automobile accident while returning from a professional call. Dr. Hallenberg was a young man of much promise. He made friends easily and kept them. His quality of friendship he shared with his patients as he ministered to their wants. He was a capable practitioner and was forging ahead in the profession he loved so well.

Charles E. Howard

Dr. C. E. Howard was born in Wisconsin in 1879. He graduated from the American College of Medicine in Pennsylvania (Eclectic) and was licensed to practice medicine from Sargent County, in North Dakota, April 16, 1908. He enlisted in the army and was a captain in its Medical Corps. His place of residence and practice in the state was Cogswell. He passed away in a Fargo hospital July 29, 1934, survived by a sister and two sons.

Arthur C. Dean

Dr. A. C. Dean was born in North Dakota, grew to mature manhood in North Dakota, received his academic and preliminary professional education in North Dakota, practiced for a time in North Dakota, and at the time of death, although not a resident of the state nor a member of our Association, merits a place among those of our fellows who have finished their work. Dr. Dean was born July 23, 1887, and passed away December 1, 1934, at St. Mary's Hospital, East St. Louis, Ill. He received an Academic Degree from Fargo College and Bachelor of Science in Medicine from the University of North Dakota. He graduated from Jefferson Medical College in 1917, and was licensed in North Dakota in 1919. During the World War he served as a member of the Navy Medical Corps on the Hospital Ship Mercy. He later was associated with Drs. Campbell and Williamson, of Grand Forks, where he practiced for two years. Failing health compelled him to go west for a time, after which he took special training in eye, ear, nose and throat conditions and practiced as a specialist in Crookston, Minn., and in Hot Springs, S. D. He had recently accepted a position on the staff of Washington University Medical School in St. Louis. Dr. Dean was an active member in medical societies and was looked upon as a hard worker and a progressive member of his profession. He never lagged but kept fully abreast with the leaders in professional knowledge. He always kept sight of his ascendant star and followed its gleam to the end. His remains were laid away in Memorial Park, Grand Forks, with Masonic and military honors.

Charles Davenport Owston

Dr. C. D. Owston was born at Fertile, Minn., October 14, 1903, and passed away at Grafton, N. D., on December 4, 1934. He received his scholastic training at Grafton, N. D., where his parents, Mr. and Mrs. F. L. Owston reside, at the University of North Dakota, and Hamline University, and his medical education at Marquette University

and the University of Louisville, Ky., where he graduated as an M.D. in 1930. He was licensed to practice in North Dakota July 10, 1931, located at Walhalla, and later removed to Neche, where he remained until his death. Dr. Owston was a young man of promise, and his untimely passing when just beginning to enter upon the serious, earning, home-making business of a professional life has left shadows that linger.

William Curtis Wolverton

Dr. W. C. Wolverton was born at Greensboro, Pa., January 22, 1879, and passed away at his home at Linton, N. D., January 11, 1935. He graduated from the School of Medicine, University of Iowa, in 1905, and began practice at Badger, Iowa. In 1906, he moved to Linton, N. D., and was licensed in the state July 9th of the same year. In 1911, he moved to Fort Dodge, Iowa, but returned in 1913 to Linton, where he lived and practiced his profession until his death.

Dr. Wolverton was a progressive man in every sense of the word. He took an active interest in community affairs and could always be depended upon to give his support to those measures that pointed upward and forward. He held many positions of trust and responsibility and he proved himself worthy of them. He served on the Linton School Board, the Linton Park Board, as county health officer, city health officer, medical examiner of local draft board, and as an active participant in other civic projects. At the time of his death, he was president of the Sixth District Medical Society. He stood high in the medical and surgical circles of state and nation and was accounted an honor to his profession. Of him, the Emmons County Record, his home paper, has this to say: "A man whose life work has been closely linked with the welfare of Linton and Emmons County is lost to the people. In the practice of his profession, he has welcomed many a little stranger into the world, braved the elements to reach the home of pain, sat by the bedside of suffering through weary hours, soothed the fevered body and nursed the patient back to health and strength. The relationship of the family doctor to the household is an intimate one, and Dr. Wolverton carried into the homes of the people whom he served a feeling of security and hope. In his passing, Linton and Emmons County have lost a man whose labors have made an enviable place for him in their history."

Dwight S. Moore

Dr. D. S. Moore was a graduate of the College of Medicine, University of Nebraska, 1887, was admitted to practice in North Dakota by license November 13, 1890, and died at Pasadena, Calif., March 23, 1935, aged 69 years.

Dr. Moore was assistant superintendent to Dr. O. W. Archibald at the State Hospital, Jamestown, N. D., for several years and later became superintendent of the institution. He was a physician of recognized ability and at the time of his death was on the staff of a Pasadena, Calif., sanitarium. He was a charter member of the Tri-County Medical Society, along with Dr. Chas. MacLachlan, of New Rockford, now of San Haven, and Dr. A. B. Cooke, of Sykeston, now of Los Angeles, Calif. It is a striking coincident that the latter gentleman acted as one of his pallbearers. Dr. Moore, at the 1890 meeting of our State Association at Jamestown, read a paper on the New Hypnotics, and for the year 1902-3 served as its secretary. It will thus be seen that he was one of the Rear Guard, worthy and well equipped, connected with organized medicine in our state. To such as he, the profession owes a debt of gratitude.

Charles P. Buzzell

Dr. C. P. Buzzell was born December 28, 1867, at Nottingham, New Hampshire, and died at Cleveland, N. D., February 22, 1935. He was a graduate of the University of Vermont in 1892. He practiced his profession in his native state until 1910, when he located at Napoleon, N. D. He was licensed in North Dakota July 19, 1911. In 1913 he moved to Cleveland, N. D., where he remained until his death. He was interested in civic affairs and served on school, health, and town boards at various times. He took an active interest in church affairs and at his funeral was paid a fine tribute as a sincere and worthy christian gentleman.

Dr. Buzzell was married in 1894 to Mae Gilman, who passed away in 1916. To them were born two daughters, Marion, of Stanton, N. D., and Pauline, of Bismarck, and a son, David, of Los Angeles, all of whom survive. He was married in 1919 to May L. Evans, of Conway, N. H., and she also survives.

Dr. Buzzell was recognized as a man of fine character, and his work and worth were appreciated by those who had an opportunity of knowing him. He will be much missed, and that is perhaps as fine a compliment as we can pay him.

R. R. Hogue

Dr. R. R. Hogue, a native of Sparta, Wis., passed away at a Bismarck Hospital, June 18, 1934, aged 58 years. He graduated from Rush

Medical College, Chicago, 1899, and was licensed in North Dakota October 12th, the same year. Locating in Linton, N. D., in 1903, he became one of the outstanding pioneers in Emmons County. He was a man with a vision and had the faculty of making his dreams assume tangible form. He built a hotel and hospital in 1905 and operated them until 1918, when they were disposed of to Dr. W. C. Wolverton. Later he organized The Willows, Inc., and was its general manager. During the World War he was commissioned a captain and was trained at Rochester, Minn., and Chicago, Ill. He took an active interest in civic affairs and was one of the founders of the North Dakota Taxpayers Association. Dr. Hogue was a man of energy and a progressive and well-trained physician. Besides his widow he leaves a son and a sister, Mrs. Phillips, Harvey, N. D.

Albert Arthur Jackson Lang

Dr. A. A. J. Lang was born May 23, 1865, at Almont, Ontario, and died at his home in Jamestown, N. D., February 28, 1935. He graduated from McGill University, Montreal, Canada, in 1898, and came to North Dakota where he was licensed January 14, 1899. He located at Sanborn, N. D., in 1898, and there remained until 1926, when he moved to Jamestown, where he resided the remainder of his life. He was married in 1900 to Gertrude A. Frampton, of Sanborn, who died November 20, 1933. There was one daughter, Miss Adeline, who survives, and who is a member of the faculty of the East High School, Madison, Wis.

Dr. Lang was a pioneer, and one of the best known physicians of Barnes and Stutsman Counties. For 37 years, he gave the best of which he was capable for the relief of suffering, the betterment of those he so faithfully served, and the upbuilding of his adopted country.

Frank Howard Van Dyke

Dr. F. H. Van Dyke, of St. Paul, Minn., died at Rochester, Minn., June 6, 1934, at the age of seventy-nine. He was a graduate of Miami Medical College, Cincinnati, Ohio, in the class of 1886. He was licensed in North Dakota, May 16, 1904, from Williston, N. D., where he continued to practice his profession for about twelve years, holding the position of surgeon for the Great Northern Railway. He moved to St. Paul, Minn., some eighteen years ago, where he remained until the time of his death. He was a charter member of the Northwestern Medical Society of our state, and was accounted a gentleman of honor and ability.

George A. Carpenter

(For obituary of Dr. Carpenter, see JOURNAL-LANCET of March 15, 1935.)

PRESIDENT STACKHOUSE: I have been asked by Dr. Greene, chairman of the Council, to announce that he has appointed Dr. Spear and Dr. Drew as members of the auditing committee.

Editorial Committee on Journal-Lancet

Dr. J. O. Arnson, chairman, presented the following report:

The Committee on the Editorial Board of the JOURNAL-LANCET has not a great deal to report. The condition of the JOURNAL-LANCET, as far as the advertising and the material that has been published, has, we think, been greatly improved from time to time. The Board of Editors is prevailed upon to submit editorials, and there has been a little difficulty in getting a response from the Board of Editors in North Dakota, and we thought it would be a very good idea to solicit subject matter from the members of the Association. I think this should be given some publicity, so that if some member of the Society had some subject that he thought was of pertinent interest to the members of the Society, that he would get in touch with the member of the Board of Editors, nearest to him in his district, and then the matter could be aired in the editorial column.

We believe the present relationship between the Society and the JOURNAL-LANCET should be maintained. We think it probably would be to our advantage to keep it on a temporary yearly basis because that gives us probably a little better leverage on the publishers. We do not believe we should enter into a rather long term contract with the Board.

One other suggestion, which we think should be submitted to the publishers and the general management, is to change the publication of the JOURNAL-LANCET from twice monthly to a monthly magazine. Now there would be some advantages in this, we believe, because it would at least be a more presentable appearing journal; whether the general contents would be improved or not, it is difficult to say, but that is a suggestion that might be feasible, and we would like to hear the voice of the delegates on the matter.

Dr. A. R. Sorenson moved that the report be referred to the Council for their approval.

Dr. E. L. Goss seconded the motion, which was duly put and carried.

Committee on Hospitals

No report was presented.

Committee on Medical Economics

Dr. H. A. Brandes, chairman, presented the following report:

During the past year, your committee has been active in the continuation of its efforts through the component societies for the adoption in all counties of the Medical Relief Plan; in the organization of the work in the counties receiving federal aid for medical care; and in the work connected with the statewide Medical and Dental Corrective Program.

Our Relief Program has been in operation in a large number of counties for almost eighteen months, and although we must admit that it is not a perfect plan, it does provide better medical care to the sick, indigent and unemployed than obtained with the county physician set-up. This is not intended as a criticism of the services given by physicians employed as county physicians, who are as a general rule, overworked and underpaid. These two factors are not conducive to good medical care.

Requests were received from component societies to discuss the Medical Relief problem with their members, and during the year members of the committee met with the Northwest District, Stutsman County, Southwestern District, Grand Forks District Societies and the North Dakota Academy of Ophthalmology and Otolaryngology.

We regret to report that our efforts for statewide adoption of our Relief Plan have met with little success the past year. There are still fourteen counties employing county physicians, and in five counties a group of physicians has entered into an agreement or contract with the county commissioners to treat all indigent and relief patients requiring hospitalization at rates ranging from $500 to $1,000 per annum.

F. E. R. A. Activities

Early last fall Mr. E. A. Willson, Relief Administrator, recognized the need for federal funds for medical care, and after a financial survey of the counties in our state, designated as eligible for federal assistance as of December 1, 1934, the following counties: Sioux, Morton, Kidder, Divide, Logan, Grant, Sheridan, Ward, Benson and Rolette.

On January 1, 1935, Mountrail and Burke Counties were added to the list and on March 1, 1935, federal funds were allotted to McKenzie County.

The allotment of federal funds for medical care to Kidder and Logan Counties was discontinued on March 1, 1935, by the State Relief Administrator, as further investigation of the finances of these two counties disclosed that they had no bonded indebtedness and, therefore, were not entitled to federal assistance.

The Relief Administrator appreciates very much the wholehearted co-operation given the relief organization by the physicians in the counties receiving federal funds. This, we feel, speaks very well for the willingness of the profession to do their part in these days of economic distress. In our work with the FERA of North Dakota, we have received the utmost consideration from the State Relief Administrator and his departmental officers, and the committee is deeply appreciative of their work in medical relief activities.

We desire at this point to call the attention of the organized medical profession to the importance of being prepared to meet and to make the necessary adjustments to the rapidly changing conditions taking place in our social and economic order. To illustrate, when called upon by the FERA of North Dakota in July, 1934, to submit a fee schedule for the Corrective Care Program, and again in November, 1934, for a plan and schedule of fees for relief patients in counties eligible for federal funds, there was no delay in complying with the requests because the North Dakota State Medical Association had recognized the need and had prepared a medical relief program in the fall of 1933. As most of you know, the plan and fee schedule of your state organization was adopted by the State Relief Administrator without change except for the item on mileage, which was reduced from a net fee of 33 cents to 20 cents per mile for each mile traveled from city limits.

Medical and Dental Corrective Program

It will be recalled that in our last annual report, mention was made of preliminary work that had been carried on for a statewide medical and dental corrective program with funds from the FERA of North Dakota. The project which provides for the correction of medical and dental defects in children under 14 years of age was begun September 1, 1934, and to date approximately 10,000 children have received care and $76,000 paid out for services to physicians and dentists participating in the work.

Immunization Program

Under the plan approved by the State Medical Association at the last annual meeting, for the participation of the physicians in a statewide immunization program for children of parents on relief rolls, approximately 51,000 children have been immunized against diphtheria and smallpox.

Although a large number of children have been immunized in this project, financed entirely with federal funds, it is only the beginning in the campaign to eradicate diphtheria from the state, and we would urge that the profession, in co-operation with the State Public Health Department, continue its efforts to bring protection to all of the children in our state. For further details on the Immunization Program, we would refer to the report of Dr. Maysil M. Williams, chairman of the Committee on Public Health.

The committee deeply appreciates the fine spirit of co-operation and helpfulness received from Dr. Maysil M. Williams, State Health Officer, Miss Ruth Wisnesaes, R.N., Director of Nursing Service, and the personnel of the State Public Health Nursing Service, during the past year, particularly in the Immunization and Corrective Care Programs.

In the very near future, the organized medical profession will be called upon to decide on the policy or action they wish to take regarding their participation in public health programs, such as immunization, health examinations, and tuberculosis control, and your committee requests instructions for their guidance during the coming year. We would suggest that a committee be appointed to confer with the State Health Officer and to decide on a policy and prepare a program satisfactory to the profession and to the State Public Health Department.

Meetings

Upon the call of President Stackhouse, your committee met with the Executive Committee in Fargo on December 16, 1934, and reported our activities for the preceding six months.

The chairman of the Committee on Medical Economics attended the Northwest Medical Conference held in St. Paul, February 24, 1935, where papers and discussions were presented on subjects of great importance to the profession and its relation to the public. It was evident that our plan for the care of the sick indigent and unemployed compares very favorably with medical relief programs in other states.

Sales Tax Act

The committee sent out a form letter to all the physicians on the Sales Tax Act which became effective May 1, 1935. While the Sales Tax Law does not call for a tax on professional services, the physician must pay a two per cent tax on receipts from sales on tangible properties, such as medicines, dressings, and bandages when sold separately and apart from his services: and on braces, trusses, glasses, etc.

The work of the committee during the past twelve months has increased over that of the preceding year, resulting in a greater expense for carrying on our activities.

We are submitting herewith an itemized account in the sum of $129.71 covering the expenses for the year. All bills have been paid by the chairman of the committee.

Dr. Frank Darrow moved that the report of the Committee on Medical Economics be referred to the Council.

The motion was seconded by Dr. Rolfe Tainter, duly put, and carried.

The following discussion ensued:

Dr. A. D. McCannel: I think a word in regard to the operation of the State Welfare Board is not amiss. The appointment as a member of this Board was wished upon me.

The powers given to the State Welfare Board and to the County Boards are very liberal and far-reaching on this question of county physician. As I see it, the law as passed will take care of this matter so that as soon as the County Welfare Boards are appointed, which will be in the next few weeks, we will have very little trouble. Last Friday we passed on about forty-five of the counties who were ready for welfare boards. When the boards are appointed the relief work in these counties will be taken out of the hands of the county commissioners and put under the supervision of the welfare boards. Under this set-up we will have very little trouble in putting over the program making every physician a county physician.

I might say that your State Welfare Board is in no way a political organization, and we do not want anyone on the county welfare boards who is representing any political group or faction. In the future, we will be dealing with a county welfare board of five, seven or nine men and women in charge of the welfare work in that county, who will be entirely independent of and in no way influenced by any political affiliations.

Dr. Hoepfer (Williams County): We have gone into that very carefully and there is no provision in the law saying that the Welfare Board can spend the county's money.

Dr. McCannel (continuing): That is the opinion of one attorney only. We heard that at the State Welfare Board meeting. If that were true, the county welfare board would have no reason for existence. That would destroy the very thing the legislators seem to have had in mind, namely, eliminating all taint of politics from county welfare work. The county commissioners

appoint the county board, but it must be okayed by the State Welfare Board.

At our Board meeting last Friday, we had an opinion submitted to us by Williams County to the effect that the Welfare Board was not authorized to spend county money. This is not the interpretation of this law as submitted by the judges and some of the attorneys at Bismarck. Their opinion is that the Welfare Act is in conformity with the law required by the Federal Government for the welfare set-up.

We had quite an experience with our county commissioners in Ward County. We had to go a long way before we could get them to conform to the arrangements required by the State Economic Committee making every physician a county physician. We went so far as to do the work for a few months free. We were convinced that this was the only plan fair to both the physicians and to the patients. I do not believe that Ward County would go back to the old "County Physician" idea. True enough, the hospital bills have mounted. This is not due to the set-up, however, but to the fact that everyone feels that he is entitled to get medical relief.

A DELEGATE: Will you be satisfied with the fees you are now getting?

DR. MCCANNEL (continuing): This plan is purely an emergency measure. It was distinctly understood at that time that the fees were to be for the period of the emergency only.

PRESIDENT STACKHOUSE: Any further discussion on economics? I think you all realize somewhat the amount of work that the Chairman of the Economics Committee has done. He has attended meetings of the committee outside of his home town, been down to Valley City and Fargo a couple of times, and besides he has traveled to your local societies and explained the proposition and he has answered reams of correspondence. In fact, I think he has put himself in a position where he cannot be replaced.

DR. BRANDES: I am anxious to have a committee appointed to meet with Dr. Zieg'er, who is assistant medical director to Harry Hopkins. He will be able to tell us what this large relief bill carries in the way of funds for public health activities. I want this committee to confer with the State Public Health Department or your executive committee and work out some plan, as there will be the question of fees. If it is public health, all well and good, but I don't think anybody knows how it is going to come out here. As I understand it, these funds that are allotted this state will come through one clearing house, the State Welfare Board, the committee Dr. McCannel is on, but probably there will be some revisions.

This bill will also carry money for the building of new hospitals and I asked Dr. Ziegler what provisions they will make for this. He stated that probably they would have to conform to the rules or requirements laid down by the College of Surgeons. If that happens, some counties will have a little difficulty in meeting those requirements, but the funds may be in that bill for the building of hospitals. If they do, you may have as many hospitals as you do airports over the state.

A DELEGATE: Why can't your committee take the responsibility, Dr. McCannel?

DR. MCCANNEL: This question was brought out at that meeting. Due to the lack of co-operation in some cities, between the State Medical Society and Public Health Department, the lay organizations have taken hold of it, going ahead and putting on a program. For instance, in South Dakota, the "40 and 8" jumped in there and have taken credit for the whole public health program. The state society was left out, whereas in Indiana, there is strong co-operation with the state society and they have been able to administer the funds. I think we should do that in North Dakota, co-operate very closely with the State Society.

DR. WILLIAMSON: What plan would you suggest for the Society?

DR. MCCANNEL: Have a committee on public health to co-operate with the public health department. I think the Society should, if possible, take complete control.

DR. DARROW: We had a little experience with that in Fargo and it is not so good.

DR. RAMSTAD: Last year we appointed an executive committee, the plan being that when any important matter came up that had to have immediate action, this executive committee should act for the Society. We gave them all the authority we possibly could. Dr. Brandes asked for this committee, and it grew to be a very important one, especially to the men in the rural communities. That committee consisted of the President of the State Society, the State Secretary, one member from the House of Delegates, one from the Council, and one other to be appointed by the State President. I am wondering if that would not be about as representative a committee as you could get for that purpose. They have had lots of experience. We can hold them responsible, and many of them have had many years of service, most of them having had

many years of practice in medicine. I would suggest this committee be considered.

Dr. Crawford: Dr. McCannel brought out a very important point, that is if this Society doesn't get into these different things, the lay people step in. That is what happened when the laymen got in on these hospital propositions and these different outside clinics, and all the rest of it in big cities, and I think the Society, as a whole, should get right into the game, and anything with the label of, or regarding public health, that the Society should get into the game because the laymen and women are trying to get in on it for jobs and everything else, and when they get through with it, they will absorb the bulk of the stuff.

President Stackhouse: What program has the public health department gone in for? We have completed the immunization, have we not?

Dr. H. A. Brandes: In the near future the profession will be called upon to outline a policy for the immunization of children not on relief rolls. Dr. Williams, State Health Officer, is anxious that the state-wide immunization program include all children regardless of the parents' financial status. If we are to embark on such a program, it will be necessary to work out a plan with the State Health Department that will be satisfactory to all concerned. You are aware that the State Health Department has no funds with which to carry out such a project. We shall also be called upon to co-operate with the State Health Department in the control of tuberculosis in our state during the coming year, and this matter should receive immediate consideration by the organized profession. I would suggest that a committee be appointed to confer with the State Health Officer in these matters and formulate a plan for the guidance of your Committee on Medical Economics.

Dr. Darrow: I move this work be left to the executive committee.

Dr. Williamson: Second the motion.

Dr. Sorenson: I would suggest this executive committee, or some other committee, be appointed to make a study of this plan and outline a plan to present to the next meeting, or, if any hurry, present it by mail, but have some group make a study and outline a plan.

Dr. H. A. Brandes: I do not think that we should wait until the next meeting. Of course the Executive Committee has the power to take action on any questions that may arise between our annual meetings. I feel that we can entrust the whole matter to them.

Dr. Sorenson: This is a matter of policy, not only for this time, but for future time. It should be something well worked out.

The motion was stated by the President, which was duly put and carried.

President Stackhouse commended Dr. Brandes for his excellent and untiring work on the Committee on Medical Economics.

Committee on Cancer Survey

Dr. H. E. French for Dr. E. P. Quain, presented the following report:

The Committee on Cancer has attempted to promote the same program that it introduced last year. Practically all of our component district societies devoted an entire meeting to a symposium on the subject "Tumors of the Breast" during the 1933-34 season. We urged them to devote another meeting during the year to the subject of "Cancer of the Uterus" and several of the societies have complied with this request.

Dr. Flude, Field Representative of the American Society for the Control of Cancer, visited us in Bismarck last October and urged us to carry on with the same general program which he presented to us in 1933. This program stresses the education of the physician in cancer diagnosis, with lay education as a secondary feature. There is no doubt that physicians need to become cancer conscious, because too many patients are going through an unnecessary period of delay between the time of the first consultation and the institution of treatment. Various as the theories of the cause and treatment of cancer may be, there is complete agreement among students of cancer that immediate diagnosis and adequate treatment offer the only hope for the cancer patient. For this reason, all physicians, especially general practitioners who see most of the cancer patients first, must be aware of the early signs of cancer and must be willing to refer the patient to someone who can give the patient the benefit of adequate treatment. Therefore, we believe that the idea of symposiums devoted to the subject of cancer should be fostered during the coming year.

The radio offers the best medium for educating the lay public in cancer, but until some definite policy for broadcasts is established by our State Society, we obviously cannot use this medium for cancer education.

E. P. Quain, M.D.,
Chairman.

The motion to adopt this report was seconded and unanimously carried.

Dr. Chas. McLachlan, Chairman of the Com-

mittee on Tuberculosis, requested that his report be delayed until the next session of the House of Delegates.

Committee on Military Affairs

Dr. L. B. Greene, Chairman, presented the following report:

The committee urges all physicians of the state holding commissions in the Medical Officers Reserve Corps to not allow their commissions to lapse. The committee is in accord with all the provisions of the National Defense Act, and further urges universal conscription not only of men, but of all industries in the event of another war involving the United States of America. The committee is in favor of the continuation of the Civilian Training Camps and is utterly opposed to all attempts by so-called pacifists to do away with the R. O. T. C. and all military training in our state college and the University of North Dakota.

Committee on Public Relations

Dr. Frank I. Darrow, Chairman, presented the following report:

It was the idea of this committee that sometime during its existence, some of the affairs the public was interested in could be presented from the medical viewpoint. This year there was so much legislative work and so much work on the Committee on Economics that in the opinion of the chairman of this committee, there wasn't anything of importance along this line to justify the expenditure of money. However, there have been no suggestions from the members of the society which we requested last time, nor the members of the committee so no special work has been done by this committee other than through the help of Dr. Skelsey, some of the publicity of our meetings has been given to the newspapers.

Committee on Care of Early Mental Cases

Dr. Brandes stated that no committee meetings had been held, and in the absence of Dr. Carr, there was no report.

Committee on Public Health

Dr. Maysil M. Williams, chairman, presented the following report:

The Committee on Public Health of the North Dakota State Medical Association submit the following:

1. Public Health Committee recommends the adoption of a resolution endorsing the organization of county or district health units that meet with the approval of the U. S. P. H. Service in order that North Dakota may avail itself of such federal funds as may be in the future allotted for this work.

2. Public Health Committee recommends that the State Medical Society appoint a committee of three or five outside of the Public Health Committee to study rural public health practices, and to report to the President of the State Medical Society.

3. That the State Medical Society recommend that the family physician exercise more diligence in the registering of births and in supplying more accurate diagnosis on death certificates.

4. That the State Medical Society recommends that the family physician be responsible for the immunization against diphtheria and smallpox of all children before the age of one year.

5. That the State Medical Society recommends a keener interest in the production of safe milk.

MAYSIL M. WILLIAMS, M.D.,
Chairman.

A motion was made, seconded, and duly carried adopting this report.

President Stackhouse appointed a nominating committee consisting of Dr. Rolfe Tainter of Fargo, chairman; Dr. J. W. Bowen of Dickinson, and Dr. John Crawford of New Rockford.

WOMEN'S AUXILIARY

DR. ROLFE TAINTER: Last week the Cass County Medical Society held a meeting to hear the President of the Women's Auxiliary in Minnesota, and she presented the reasons why she thought an auxiliary should be formed in this state. She was a good saleswoman, and at the conclusion of her remarks we were in favor of the formation of such an auxiliary. The delegates, Dr. Darrow and myself, were instructed to bring the matter before the House of Delegates. At present there are 38 such organizations in the U. S.

DR. FRANK DARROW: Apparently where this has been tried, it is successful, and as I understand it, we are simply asking the State Society to sanction the formation of groups in the various districts. It is not obligatory to organize the auxiliaries, and if the women in any particular district are not interested, all well and good. In these times, there are many things of interest which develop, and which the women contact in their clubs, etc., so I believe it would be of real value to us. We from Cass County desire the House of Delegates to sanction the formation

of auxiliary units, and I would like to put that in the form of a motion.

Dr. Tainter seconded the motion.

Dr. Ramstad moved that the matter be laid on the table until the next meeting of the House of Delegates.

Dr. Pray seconded the motion, which was duly put and carried.

The Auditing Committee handed in the secretary's and the Treasurer's report; which had been audited and approved, said reports then being submitted to the Council.

A motion was duly made, seconded and carried that the meeting adjourn at 12:30 A. M. to meet again at 10:00 A. M.

SECOND MEETING

HOUSE OF DELEGATES

The adjourned meeting of the House of Delegates was called to order by President C. E. Stackhouse, at 10:00 A. M. on May 27, 1935.

Secretary Skelsey called the roll and reported a quorum present.

President Stackhouse declared the House duly constituted for the transaction of business.

Report of Committee on Nominations

President Stackhouse presented the following report of the Secretary of the Committee:

President, A. D. McCannel, M.D.....Minot
President-elect, W. A. Gerrish, M.D...Jamestown
First Vice-president, E. L. Goss, M.D..Carrington
Second Vice-president, Wm. H. Long, M.D.....
..... Fargo
Secretary, A. W. Skelsey, M.D.....Fargo
Treasurer, W. W. Wood, M.D.....Jamestown
Delegate to A. M. A., year 1936, A. P.
Nachtwey, M.D.....Dickinson
Alternate, James P. Aylen.....Grafton

Councilors

First District, Murdoch MacGregor, M.D..Fargo
Third District, G. M. Williamson, M. D.....
.....Grand Forks
Sixth District, N. O. Ramstad, M.D....Bismarck

State Board of Medical Examiners

J. E. Countryman, M.D.....Grafton
H. A. Brandes, M.D.....Bismarck
W. H. Long, M.D.....Fargo

Dr. Williamson moved that the report be received and adopted.

Dr. Cuthbert seconded the motion, which was duly put and unanimously carried.

Selection of Meeting Place

Dr. W. W. Wood, on behalf of his local society, invited the association to hold the next annual meeting in Jamestown.

Dr. E. L. Goss moved that the invitation to meet in Jamestown in 1936 be accepted.

Secretary Skelsey stated that he had on file an invitation from Dr. Landry representing the Grand Forks District Medical Society for the next annual meeting at Grand Forks.

Dr. N. O. Ramstad, representing the Sixth District Medical Society, extended an invitation to the association to hold the next annual meeting in Bismarck.

Dr. G. M. Williamson of Grand Forks said they would withdraw their invitation, but would again renew same for the 1937 convention.

Dr. R. W. Pence of Minot seconded the motion of Dr. Goss that the invitation to Jamestown be accepted. The motion was duly put and carried.

Report of Committee on Tuberculosis State Sanatorium Section

Our greatest need at San Haven during the past year has been infirmary bed accommodations, necessary to care for many newly admitted infirmary cases in cottages equipped for exercise patients only, rather than to leave them in their homes, a contact menace, until an empty infirmary bed was available. At one time in January, there were 107 applicants on the waiting list.

Meagerness of salary allowance deprived us of the services of three dietitians and of two competent physicians within the past nine months.

Notwithstanding these deprivations we were unabled to give the public the following service:

Patients admitted and cared for from May 1, 1934 to May 1, 1935—203.

Adult, males—73.

Adult, females—87.

Child contacts between the ages of six months and 14 years—43.

Patients discharged during same period—162.

Adult, males—48.

Adult, females—75.

Children—39.

Mortality, same period—23.

Of the adult males, 52 were suffering from far advanced disease.

Of the adult females, 63 were suffering from far advanced disease.

Of the children, four were bone and joint cases, while four were cared for in the infirmary as open pulmonary or sinus discharging cases.

Cases taking pneumothorax to May 1st—102.

Cases tried and failing to take pneumothorax for the year—6.

Waiting list varied during that period between 57 and 107.

Twelve out of the last 15 admitted were not only far advanced but were hopelessly diseased, emphasizing the necessity for a field program to discover, segregate and give infirmary care for cases early, following infection.

Examination of outside patients during the year—299.

Outside plates interpreted and reported on from May, 1934 to May, 1935—228.

Physicians phrenics performed during the year on San Haven patients—35.

Thoracoplasties done outside during same period—4.

Of these, three have since been discharged and one returned to sanitorium for further treatment.

Seven patient on the waiting list died during the past ten months, while awaiting admittance.

Talks promoting medical and public interest in tuberculosis:

Dr. Hall

1 May, 1934—Women's Club, Bottineau.
2. November 22, 1934—spoke before Northwestern District Medical Society, Minot.
3. December 19, 1934—spoke at 6:30 at the Hotel Dacotah, before the Grand Forks District Medical Society, Grand Forks.
4. January 9, 1935—spoke at the State Hospital at 7:30 before the Stutsman County Medical Society, Jamestown.
5. March 18, 1935—Rugby at 4:15 P. M. before the Advisory Nursing Committee on Health.
6. April 13, 1935—9 o'clock A. M. at Valley City before the Women's Federated Clubs.
7. April 26, 1935—spoke at San Haven before a group of FERA nurses, Miss Leona Brown, District Nursing Supervisor.
8. April 26, 1935—PTA, Dunseith, subject: "Talks on the Prevention and Treatment of TBC."

Dr. Cremer

9. Spoke before the PTA, Dunseith in October 1934. Subject: "Prevention and Control of Communicable Diseases."
10. Also gave a talk at Willow City, December 17, 1934. Subject: "Childhood Tuberculosis."

Recognizing the urgency of our appeal for more infirmary space, the 1935 Legislature appropriated $165,000 for a new infirmary unit and equipment, together with the necessary additional power house construction, and increased electrical power required.

This appropriation was granted with the understanding that the Federal Government would co-operate in financing the same. We have President Roosevelt's assurance that our claim will have due consideration under the new set-up.

During the legislative session, two tentative relief propositions appeared, each of which seemed to offer hospitalization relief for the care at one or both of these places of some 64 patients whose time limit had been exceeded at San Haven, and whose condition was such that arrest seemed improbable and further, whose continued infirmary bed occupancy was an obstacle to the admission of as many cases on the waiting list for whom much hope with infirmary care could reasonably be entertained. The legislature provided $10,000 for the care of such cases under conditions as presented by these two or other offerings of like character for the next two years. These offerings, at Kenmare and Northwood, were thoroughly investigated with a view of closing contracts, but in the end the management of each failed to make contract.

Attention is called to the improbability of keeping the waiting list down to a minimal number until the proposed new unit is constructed and equipped, which cannot well be within a year and a half, unless co-operation on the part of practising physicians will induce local hospital managements to care for some of these in the home counties or in clinic centers. Better, however, if they will find hospital care in the home county for our insurably afflicted and replace them here with early redeemable cases.

At a meeting held at San Haven in July last, under the caption "Border Medical Society," and participated in by TBC specialists on both sides of the International boundary, the Minnesota, Iowa, and Manitoba field operation plans were discussed. Some practical ideas of all these plans might well be welded into a unified whole and put into operation in North Dakota with legislative aid secured through our committee on Legislation. It is manifest to every interested reader on the subject that high-lights in this speciality are as one as to the importance of early seeking for and finding the bacillus and dealing with it summarily.

I feel that this association should give credit-

able recognition to the doctors and nurses of Richland County for the real service already performed in skin testing nearly 3,000 children and adults and following up the reactors with x-ray chest plates.

Although short of staff help temporarily, when re-inforced as we will be within a month, the members of the Medical Staff of the Sanatorium will bend every reasonable energy toward co-operating with county and city health officers and nurses toward uncovering the enemy and providing care for the diseased.

CHARLES MCLACHLAN, M.D.,
Chairman.

Dr. McLachlan explained informally the recent press notices concerning a "walk-out" of the help in the kitchen following notification that they were to be charged for breakage of dishes.

The report was discussed informally by Drs. Crawford, Williamson, McGregor, Goss, Cuthbert and Ramstad.

Dr. Crawford inquired as to what effort was being put forth to seek out cases of tuberculosis in the state.

Dr. McLachlan stated that while it was no part of their work, some effort had been exerted to contact local practitioners and health officers.

Dr. Williamson requested information as to the method of disbursing money realized from the sale of Chistmas seals.

Dr. Goss and Dr. Cuthbert both stated the money was used for many purposes other than the tuberculosis work.

Dr. Crawford suggested that a resolution be offered that it was the concensus of opinion of the society that the State Anti-Tuberculosis Society should confine their entire efforts to anti-tuberculosis work, especially in the detection of early cases.

Dr. Ramstad stated that he personally knew the officers of the Anti-tuberculosis Society, who have been working many years attempting to create public interest in this important matter; that it is unfortunate that there should be any misundersanding between the interests represented; that the officers of the Anti-tuberculosis Society and the authorities in charge of San Haven should be working hand in hand; that funds which have been collected by the state society have evidently been expended in the manner they thought best. He suggested that a committee be named, headed by the state health officer, to co-operate with the State Tuberculosis Society, in order to effect better co-operation between the two organizations.

Dr. McLachlan suggested that the chairmanship of the Committee on Tuberculosis be changed, and recommended that the State Health Officer, Dr. Williams, be substituted for him as chairman.

Considerable discussion ensued concerning the diversion of the funds received from sale of Christmas seals.

Secretary Skelsey referred to a motion made by Dr. Williamson at the 1934 meeting with reference to the appointment of a committee with Dr. Maysil Williams as chairman, to look into the matter of the sale of Christmas seals. (Motion recorded on page 510 of THE JOURNAL-LANCET of August 15, 1934.)

Dr. McLachlan moved that the report of the Sanitorium Section of the Tuberculosis Committee be accepted.

Dr. Goss seconded the motion, which was duly put and carried.

Report of Chairman of Council

The Council has held no meetings since the meeting of the Association in 1934.

The work of the Association has been excellently carried out by the various committees, and the amount of work performed has been amazing when compared with its actual cost to the Association.

The Association is in good condition financially and this condition will even be bettered during the coming year. Realizing that much adverse legislation will undoubtedly be launched at the next session of the state legislature in 1937, every effort to build up our resources to meet it should be made during the intervening time.

LEE B. GREENE, M.D.,
Chairman.

NEW BUSINESS

Women's Auxiliary

Dr. Rolfe Tainter of Fargo moved that a women's auxiliary be formed, and the usual procedure be carried out in its formation.

Dr. John Crawford seconded the motion.

Dr. E. A. Pray of Valley City stated he thought such an organization would be very helpful in gaining favorable public opinion for the medical fraternity in connection with the new set-up for public health and medical relief.

Dr. H. A. Brandes, of Bismarck, inquired if there was any expenditure of money to be made by the State Medical Society in connection with the formation of the Auxiliary.

Dr. Tainter replied that all the work is being done gratis, with the members paying a maximum fee of fifty cents per year; that the least important feature is the social side, but rather the educational side; that if the motion is approved, an organizer should be appointed who contacts the various women, and in turn each individual county forms a separate unit of the state organization and that in order to get national recognition, a state auxiliary must be organized.

The President called for a rising vote, and the motion was carried.

Dr. Tainter stated that one of the first duties of the new president would be the appointment of a state organizer.

Dr. J. W. Bowen of Dickinson referred again to the diversion of the money derived from the sale of Christmas seals, and stated it was his understanding that the funds were given to the county superintendent of schools for expenditure, and that in most instances, it was not used for the tuberculosis work, but rather medical care, such as fitting glasses, trusses, etc.

President Stackhouse suggested that he did not believe a resolution passed by the State Medical Association would have any effect on the manner in which the funds are expended, with which Dr. Bowen did not agree.

Dr. McLachlan suggested that with the state health officer the chairman of that committee, she could make a recommendation that the State Tuberculosis Association prepare a program of expenditure of the money derived from the sale of Christmas seals.

Dr. Crawford expressed himself as being in favor of a resolution asking an investigation of that particular phase of it, and to rectify it.

Attention was again called to the motion made by Dr. Williamson at the 1934 meeting, and recorded on page 510 of THE JOURNAL-LANCET of August 15, 1934.

Dr. Brandes announced that Dr. N. V. Ziegler would meet with the Executive Committee at five o'clock to discuss the problems that will be presented to the medical profession during the coming year on the pending social legislation.

Dr. E. L. Goss moved to adjourn, which was duly seconded by Dr. Rolfe Tainter. The motion was carried, and the meeting adjourned at 12 M., *sine die*.

PROCEEDINGS
of the
COUNCIL
of the
NORTH DAKOTA STATE MEDICAL ASSOCIATION
1935

FIRST MEETING
Sunday, May 26

The first meeting of the Council was held in the Masonic Club Rooms, Minot, and was called to order by the Chairman, Dr. L. B. Greene, Edgeley.

Members Present: Drs. N. O. Ramstad, E. L. Goss, G. F. Drew, M. MacGregor, P. G. Arzt, L. B. Greene, G. M. Williamson, A. E. Spear.

Minutes

Dr. A. E. Spear moved that the minutes as published in THE JOURNAL-LANCET of August 15, 1934, be adopted.

The motion was seconded and unanimously carried.

Appointment of Auditing Committee

The Chairman appointed the following to serve as an Auditing Committee: Drs. G. F. Drew and A. E. Spear.

The motion was duly made, seconded, and carried to adjourn.

SECOND MEETING
Monday, May 27

The second meeting of the Council was called to order in the Masonic Club Rooms, Minot, by the Chairman, Dr. L. B. Greene, Edgeley.

Members Present: Dr. L. B. Greene, Chairman; Dr. G. M. Williamson, Secretary; Drs. MacGregor, Arzt, Spear, Ramstad, Drew, Goss and Ransom.

Report of Auditing Committee

The Auditing Committee reported that they had examined the Treasurer's books and found the accounts correct.

Dr. Spear moved, seconded by Dr. MacGregor that the report be accepted and filed; unanimously carried.

Report of Editorial Committee on Journal-Lancet

Dr. N. O. Ramstad reported for THE JOURNAL-LANCET Committee that relations between the publishers and editorial committee were satis-

factory and cordial; that there was splendid improvement in the make-up and quality of the articles published during the past year.

Moved by Dr. Ramstad, seconded by Dr. Arzt that as per custom, the President of the Northwest District Medical Society be allowed $200 for expenses in connection with the meeting at Minot. Carried.

Election of Officers

On motion the following were elected: Dr. L. B. Greene, Edgeley, Chairman; Dr. George M. Williamson, Grand Forks, Secretary.

There being no further business, the Council adjourned.

GEORGE M. WILLIAMSON, M.D.,
Secretary.

PROCEEDINGS
of the
GENERAL MEETING
of the
NORTH DAKOTA STATE MEDICAL ASSOCIATION
1935

FIRST DAY
Monday, May 27—Evening

The first general meeting was called to order at the Episcopal Church Dining Room, at 8:30 P. M. The annual banquet preceded this meeting, at which Dr. A. L. Cameron acted as chairman.

Following the dinner, Chairman Dr. Cameron introduced the distinguished guests, including City Manager Jay W. Bliss and C. C. Simmonds, President of the Minot Retail Merchants Association, who extended a welcome to the visiting doctors.

Dr. C. E. Stackhouse presented his presidential address.

Dr. N. V. Ziegler, of the U. S. Public Health Service, Federal Relief Administration, Washington, D. C., gave a comprehensive address on the pending social legislation in connection with medical relief. A rising vote of thanks was given.

Dr. L. B. Greene read the paper prepared by Dr. L. W. Larson on "Legislative Highlights."*

Dr. H. A. Brandes of Bismarck discussed the question of Medical Economics.

Dr. Lester Dragstedt, M.D., F.A.C.S., Associate Professor of Surgery, University of Chicago, addressed the Association on "Experimental Studies on the Etiology of Gastric and Duodenal Ulcer."

*A résumé of Dr. Larson's paper will appear in an early issue of THE JOURNAL-LANCET.

The meeting was declared adjourned at 9:30 P. M., to reconvene at 9:00 A. M. Tuesday.

SECOND DAY
Tuesday, May 28—Morning

The association reconvened and was called to order at 9:15 A. M., by the president, Dr. C. E. Stackhouse, Bismarck.

Dr. Virgil S. Counsellor of the Surgical Staff of the Mayo Clinic, Rochester, Minnesota, spoke on "The Application of Nephrostomy in Surgical Conditions of the Kidney and an Analysis of the Results." Dr. D. C. Balfour of the Mayo Clinic was unable to appear as scheduled on the program.

Dr. Thos. J. Kinsella, Glen Lake Sanatorium, Oak Terrace, Minn., addressed the society on "Clinical Evaluation of Collapse Therapy Measures in the Treatment of Pulmonary Tuberculosis."

Dr. Henry F. Helmholz, Mayo Clinic, Rochester, Minn., discussed the subject of "Diagnosis of Acute Appendicitis in Childhood."

An inquiry was made concerning the pulse rate in connection with the differential diagnosis of acute appendicitis in childhood.

DR. HELMHOLZ: I doubt very much whether the pulse rate is very helpful in making the diagnosis. I don't believe there is sufficient differential value there so that I would want to put very much emphasis upon the pulse. The same is true of the respiratory rate in early pneumonias. At that stage of the game, the respiration may not be affected at all; in fact, a pneumonia does not come to the surface or may give you no signs whatsoever at that early point, that is of advantage in differential diagnosis.

DR. ZIMMERMAN, Valley City: I recall a case where the symptoms were very much more severe than a childhood appendicitis, and the father's intelligence did much toward making the diagnosis. In describing the symptoms he assured me that there must be something very unusual, because the child was having very severe paroxysms of pain; that while having these paroxysms, the reaction would be so severe that she would be covered with cold beads of perspiration. On examining the child we decided that it must be an intussusception or an intestinal obstruction. When we operated, we found a small fibrous band of adhesion obstructing the transverse colon. The child made an uneventful recovery.

Dr. Wm. H. Hengstler of St. Paul, Minn., read a paper on "Head Injuries from a Neurological Standpoint."

The meeting adjourned at 12:15 P. M. to reconvene at 2 P. M.

SECOND DAY

Afternoon

The association reconvened at 2:00 P. M. and was called to order by the president, Dr. C. E. Stackhouse, Bismarck.

President Stackhouse: The President of the Anti-tuberculosis Association wishes me to announce that the Association has a series of slides to be used by the doctors in public health education, and that a lecture prepared by Dr. J. O. Arnson is supplied with the slides. The doctors can use the lecture and these slides if they wish. They are to be placed with the State Health Department, and you may secure them at any time, if you desire.

Dr. Stackhouse announced the action of the House of Delegates in the selection of officers for the coming year, and also the selection of the meeting place for next year.

Dr. Stackhouse expressed his appreciation for having had the opportunity to act as president during the preceding year, and appointed Dr. Paul Burton to escort the new president, Dr. A. D. McCannel to the platform. Dr. McCannel was introduced, and thereupon took the chair.

Dr. McCannel: Gentlemen, I appreciate more than I can say the honor you have conferred upon me. I only hope that I can live up to the high standards of the presidents who have preceded me.

Dr. Paul O'Leary of the Mayo Clinic, Rochester, Minn., read a paper entitled "Established Values in the Specific and Non-specific Treatment of Syphilis."

Dr. R. C. Webb, Chief Surgeon, G. N. Ry., delivered an address on "The Emergency Treatment of Fractures."

Following this presentation, Dr. Paul J. Breslich, Northwest Clinic, Minot, N. D., showed some sections of slides of one of the recent cases in the clinic showing results from improper transportation.

Dr. J. A. Urner, Minneapolis General Hospital read a paper on the subject of "Complications of Pregnancy."

Dr. Wm. A. O'Brien of the University of Minnesota gave a discussion on "Granulopenia."

President McCannel, on behalf of the association, thanked the guest speakers for their courtesy in contributing to the program, and declared the Forty-eighth Annual Session adjourned at 4:45 P. M., *sine die*.

A. W. Skelsey, M.D.,
Secretary.

PRESIDENT'S ADDRESS

It was my privilege to attend the special meeting of the House of Delegates of the American Medical Association in February and to hear the resolution which you all know was unanimously passed expressing complete opposition to any form of compulsory sickness insurance.

At that meeting and since, through many reprints sent from the office of the American Medical Association, I have become acquainted with the history of sickness insurance, its failure in other countries; the gradually growing efforts to make it compulsory in the United States through propaganda sent out by financially strong organizations, and finally the success of these same organizations in making it a part of President Roosevelt's social security program. There is very little original thought in this paper; just a correlation of facts which some of you may have read and which all of you should know for your own protection.

The Federal Government has named medical care as one of the four essentials to life; the other three being food, clothing and shelter. Our problem is concerned with the economic turmoil surrounding medical care. It is important because: 1st, the health of our children and our children's children is vitally concerned; 2nd, the forces for and against socialism are waging a decisive battle for precedence around the problem of solving the economic future of medical care; and 3rd, the taxpayer is materially affected.

The problem is to provide medical care for all those who now find it difficult or impossible to pay for such care and to discover a method whereby they can pay, and so maintain their status as independent American citizens with complete freedom in their choice of physician, thus preserving the patient-physican relationship which is so indispensable to the practice of medicine.

There are three so-called philanthropic foundations which have borne the brunt of the fight to secure sickness insurance and socialized medicine in the United States.

1st—The Milbank Memorial Fund, established in New York in 1905, which is closely connected with large banks and industrial corporations. Donations to this fund have totaled $9,000,000.

2nd—The Julius Rosenwald Fund, established in Chicago in 1917, whose assets in 1929 were $34,000,000, and which provides for the distribution of medical services to the man of moderate means. Its medical director is not a physician.

3rd—The Twentieth Century Fund, Inc., organized in New York, in 1919, which has spent

$1,000,000. Among its trustees are Newton Baker and Owen Young. The funds of all these foundations represent largely the results either of exploitation of American workers through payment of low wages, or of exploitation of the American public through high prices for commodities. It is significant that the motivating influence and most of the funds for the present drive for sickness insurance have come from the above limited groups who dominate industry.

This becomes important when we recall that the President's Committee on Economic Security engaged as its technical advisors to study the question of sickness insurance, I. S. Falk, Ph.D., and Edgar Sydenstricker, M.A., of the Milbank Foundation; Nathan Sinai, former investigator for the Committee on the Cost of Medical Care, and Michael M. Davis, Ph.D., of the Julius Rosenwald Foundation. Then we have the medical advisory committee appointed by Secretary Frances Perkins, and composed of eleven members with not one general practitioner of medicine among them. Seven of them had, prior to their appointment, committed themselves to plans which rest upon the principles of sickness insurance. One of the committee, Dr. Robert Greenough, of Boston, president of the American College of Surgeons, announced himself in his presidential address in October of 1934, as favoring the principle of sickness insurance while other prominent supporters are Drs. Stewart Roberts, of Emory University; James Bruce, of Ann Arbor; Rex Brown, of California; Thomas Parran, New York Health Commissioner, who has been heard in the radio broadcast, "Doctors, Dollars and Disease"; Shelton Horsley, of Virginia, and James Miller, of New York. Only Drs. Bierring and Cushing of the entire committee had previously announced themselves opposed to sickness insurance.

There is no public demand for sickness insurance. The forces seeking its adoption have been broadcasting each week their propaganda over a chain network, proving that there is a definite drive emanating not from any public organization representing the people, but from foundations created and controlled by a few wealthy men. Efforts have been made by these same forces to sell our profession with the idea that we would enjoy economic security by adopting such a program. The fact is that our income would depend entirely upon the pleasure of legislative bodies, and of the Federal Government, which even now refuses to contribute to hospitalization of the indigent.

Our profession gives its services first; collections are made on the basis of ability to pay when possible. We have asked the community to aid us by providing reasonable compensation for care of the wholly indigent. This means slightly higher taxes and has had no support from the Rosenwalds and Milbanks who would destroy our patient-physician relationship and would make of our profession a trade.

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, preservation of their health, their care in sickness, the advancement of medical science, and the provision of adequate medical service to all the people. Therefore, for many years the profession has neglected the economic features of practice. However, recent developments have finally aroused organized medicine so that at present, economics are emphasized constantly, possibly over-emphasized. The results are startling, as shown by the varying reactions in our different component societies. For instance, a local medical society in New York has petitioned the state legislature to pass bills which would definitely establish state medicine. In the same state a law has been enacted to prohibit a corporation from practicing medicine, and is the basis of the effort of the State Medical Society to destroy the Life Extension Institute. In a similar action in Illinois we have the decision of Judge McKinley of the Superior Court against the United Medical Service, Inc., denying the right of a corporation to practice medicine. On the other hand there are bills in California before the legislature legalizing the practice of medicine for profit by corporations and bills providing care in county hospitals to all who apply for admittance, regardless of their ability to pay. The California Medical Society on March 2nd, approved the submission to the legislature of a bill providing for both voluntary and compulsory sickness insurance.

All this was done in spite of the fact that such a system has been a failure in every country where it has been tried, and its administration has only been the means of developing powerful political machines. For half a century Germany has tried it, and Germany's experience should condemn compulsory sickness insurance. Gustav Hartz, labor economist of Berlin has analyzed the fallacies of the scheme and exposed to the world the harm that it has actually produced. His analysis shows that since sickness insurance has been in effect in Germany, the average number of days of incapacity to work owing to ill health, has risen from 5½ to 28 days per year for each worker, although health in general has greatly

improved during that time. This is easily explained when we consider that the individual insurance case, due to illness, can be extended at will. We have had similar experiences under our North Dakota Workmen's Compensation Law. The doctor is frequently unable to distinguish pretenders and hypochondriacs from really disabled people, and is unable to tell when a man is actually fit to work. In Germany, sickness insurance provides the workman with medical attendance and medicine free of charge, and an allowance or compensation while disabled. Therefore the doctor is consulted a dozen times in an individual case, when once would be sufficient. Fictitious contracts are made; doctors are induced to prescribe medicine and instead of filling the prescriptions, the pharmacists hand out toilet articles and cosmetics to the patient. There has been excessive squandering of money—doctors and dentists have been involved in corruption, and in Germany no one doubts the fact that the employer's share of the premium is taken from the workmen's wages. The same conditions exist in Hungary and Denmark and would follow the establishment of such a law in the United States. Mr. Hartz has a new plan which seems feasible, namely, compulsory savings. He proposes that every worker be compelled by law to save a certain percentage of his earnings, deposit them at interest in his own name in a bank under government protection and thus take care of his own rainy days, and create his own security. Independence and a sense of responsibility of its citizens are the only means to save a country from too great a social burden. Under the Hartz plan, instead of an insurance card the workman would own a bank book. This plan was receiving serious consideration in Germany until Hitler gained control.

In spite of the fact that socialized medicine has always been a red flag to most of us, you will remember that after five years of study, the Committee on the Costs of Medical Care in the United States, which was financed by a number of wealthy men, recommended in its majority report virtually a form of state medicine. They urged that the costs of medical care be placed on a group payment basis through the use of insurance or taxation or both. The report, of course, was a "dud" because at that time no sane citizen would have voted for increased taxes for such a purpose. The reaction of the press and medical men was overwhelmingly favorable to the minority report, which recommended that governmental competition in the practice of medicine should be discontinued and that its activities should be confined to the care of the indigent and the promotion of public health. The medical profession, after years of experience, is far better able to work out its own problems according to its own high standards.

I have stated that the public has made no demand for sickness insurance, but a great number of people are lending an attentive and sympathetic ear to the propaganda that has been spread. The medical profession is not popular with many people comprising the moderate and low income group. In my opinion we ourselves are partly to blame. Our fees for services have always been too high among this group. We should lighten their financial load during any disability if we expect to regain popularity among them.

I was informed in Chicago in February that only five per cent of the entire medical practice in the United States in 1934 was among families whose income averaged more than $250.00 per month. This seems too small a percentage for the United States, but does, I believe, represent a true picture of practice in North Dakota. We know that the bulk of our practice has always been among people who were earning from $75.00 to $125.00 per month. We cannot continue to charge these people from $150.00 to $300.00 for a simple appendectomy and other fees in proportion. In the 14th century, Guy de Chauliac, the father of surgery, said, "The surgeon should be modest, dignified, gentle, and merciful—not covetous nor an extortionist of money—let his rewards be according to his work and to the means of the patient."

There are efforts being made throughout the United States to diminish medical expense to patients among the small income group. A delegate from West Virginia, who specializes in obstetrics, told me that he has been using the following procedure in his work: 48 hours after each hospital delivery he sends mother and baby home in an ambulance to complete the lying-in period. This seems feasible, for we know that the hospital expense in a given case must be held to a minimum if the doctor is to receive any compensation. New York City doctors last month ceased telling about the difficulties of keeping themselves and patients alive and started a plan to charge poor people who are too proud to take charity doctoring, $1.00 an office call and $2.00 a house visit. The standard rates had been $2.00 and $3.00 respectively. Specialists who were charging $25.00 for an office consultation now charge $5.00. Seventy-eight hospitals agreed to give annually three weeks' medical care in a

semi-private room to wage earners who pay $10.00 per year to an organization called Associated Hospital Service. The same facilities formerly cost $40.00 per week. New York and 38 other cities copied this idea from Dallas, Texas, which copied London. Last month, the New York Hospital Commission closed the Bellevue School for midwives—founded in 1911, which had trained 731 women who took care of 5,000 confinements last year, earning $40.00 per case, and who deprived licensed doctors, whose fee is $25.00, of work and money. Hundreds of other plans are being devised to lighten the burden during illness of the small income group without compulsory insurance.

But we have other difficulties besides socialized medicine to consider. What to do about the quacks and irregulars, who are among us in ever-increasing numbers not only locally but throughout the country, is a serious question. In Chicago recently, three quack doctors were up for trial in Judge E. J. Holland's court and were found guilty but were fined only one hundred dollars, the minimum penalty for practicing medicine without a license. They were then turned loose to again defraud the innocent public of money and health and infringe upon the practice of reputable physicians. The maximum penalty of a year in prison would not have been too harsh for their offense. In North Dakota, our legislative committee spent much time and energy in presenting a bill to the legislature which increased the penalty to a prison sentence for the second conviction of practicing medicine without a license. The bill passed both houses by large majorities and yet was promptly vetoed by our governor.

Another problem, growing daily in the United States, is the great difficulty experienced by both physicians and hospitals in securing payment for services rendered to persons injured in automobile accidents. In Ohio in 1933, a law was enacted to provide protection for the hospitals but in no state is the physician so protected. I'm sure that we should have a Federal law compelling each car owner to carry a liability policy with a first lien in favor of the hospital and doctor. Such legislation has received favorable consideration in the English Parliament.

We are also faced with the question of medical students and young doctors just entering practice. What chance have they to make a start in life? The commission on medical education reports that the United States is over-supplied with physicians. In spite of the excessive number of doctors turned out by our own schools, a great many American students in the last few years have enrolled in European universities with the intention of returning to this country to practice. Why do so many fathers launch their sons on this career? In my community it seems that more than one-third of the college boys are preparing for medicine. Difficulties should be explained to them before they start in this profession—how competition is growing, resulting in long and arduous task to get a foothold, how recreation and the pleasures of family life are frequently disturbed and the remuneration, if any, is insignificant. But at the present time, the biggest cloud that threatens them is socialized medicine. They understand so little of its dangers and how it will deprive them of all the satisfaction that you and I have enjoyed throughout our years of work. Many times in the past, the private practice of medicine has been more remunerative than now, but there was never a time when the physician could practice so satisfactorily. Researches have thrown so much light on diagnosis and treatment of disease that he is able to do more for the patient than ever before.

Many young men, however, look toward sickness insurance as a desirable means of getting a quick start in practice; but there is no royal road up. We older men with the advantage of experience, patient contact, and political alliance, will be difficult competitors for them in this new deal, which in time must destroy any effort on their part toward personal progress.

I have stressed compulsory sickness insurance tonight because it seems most important at the present time. Although the American Medical Association is making a noble effort, it seems impossible to prevent the present Congress from passing legislation to establish it. Physicians have always taken care of the poor for nothing. The limit to the extent of that kind of work has almost been reached at the present time; but the medical profession has managed to survive through other periods of depression and will survive now, if only the government will continue to lend assistance and not make an already desperate situation worse. Our task is to convince the public that the acceptance of socialized medicine would destroy the morale of our profession, retard scientific progress, and would entirely remove any personal interest of the physician in the patient.

C. E. Stackhouse, M.D.,
President State Medical Association,
Minot, N. D.

Report of the

NORTH DAKOTA DELEGATE

to the

ANNUAL MEETING AMERICAN MEDICAL ASSOCIATION

Atlantic City, June 10-14, 1935

This was a joint meeting with the Canadian Medical Association. During the sessions the representatives of the Canadians were introduced to our House of Delegates, Officers, and the Board of Trustees, and were given a most enthusiastic welcome. The British Medical Association cabled cordial greetings on this occasion of the first joint session. Total attendance 8,669, of which 303 were from Canada, from North Dakota 11, South Dakota 8, Montana 9, and Minnesota 78. (However, Minnesota later made amends for her relatively small attendance at A. C., by putting on its own State meeting, in Minneapolis and Rochester, with a stated attendance of about 3,000.)

Our national organization reported a good financial year. On June 1, had a membership of one hundred thousand. Its Journal showed a good net profit; Hygeia had a financial loss of only $1,060.00, compared with one of over $30,000.00 the previous year. Total financial loss for the other specialty publications, about $15,000.00. The sessions are well detailed in the Journal A.M.A., June 22 and 29. Delegates were urged to have the membership at large read carefully all of the data conveyed through said magazines. As we have never yet met any person who would confess to having waded through, completely any year, all of the transactions and committees' reports of the national House of Delegates, we shall here try to detail some of the essentials, in the hope that the North Dakotans will acquire some inoculation.

Naturally, retiring President Bierring's farewell address covered the important events of the past year, with particular reference to economics and our zealous search for a living. President-elect McLester spoke along somewhat similar lines, yet with more direct application to the constituent parts of the A.M.A. The following words from him are worth quoting: "As the Association continues to grow in strength and usefulness there is the danger that it will take on a separate identity that will lead physicians to look on it as distinct and as far removed from their more intimate state organizations. If such a feeling should develop there would be lost that closeness of contact which is so necessary for the good of our undertakings. . . . We have been sailing on rough seas. No doubt there is still some bad weather ahead, but I believe that the worst of the storm has passed, and that through the exercise of the same courage, patience, good judgment and steadfastness of purpose which you have exhibited in the past you will be able soon to steer this ship into calmer waters. After that, it will be smooth sailing under bright skies."

Dr Reinle of Oakland, Calif., referred briefly to the serious economic conditions, medically, in his state. Upon request, Dr. T. Henshaw Kelly, chairman of the council of the California State Medical Association, gave a very detailed and interesting report of conditions out there, and the reasons for the action taken by his state organizations, which procedure had seemed greatly at variance with the policy of our national organization. It had been anticipated that there would be some decided flare-up and rather hostile measures adopted against the California plan, but the whole affair, for the time being at least, ended quite amicably; in fact, some of the delegates seemingly were of the opinion that the Californians actually had acted for the best, considering conditions and outside pressure brought upon the medical fraternity in that state.

The Judicial Council: (Pp. 2266-7) Opposes as inconsistent, membership in two state associations. Urges improved methods of administering the Principles of the Code of Ethics. (Pp. 2359-60) In discussing a resolution covering the subject of solicitation of votes for official offices, and here possibly intended to cover some name or names coming up in this House, the Council waived an opinion upon same; but suggested a substitute resolution upon which it then might be willing to give its opinion. Permission being granted for said substitution, Chairman Follansbee then read an emphatic answer thereto, in referring back to the origin of the Code of Ethics and that section upon which a decision was desired now: . . . "That the section of the Ethics appealed to was adopted under the spur of a provocative occasion, when emotion superseded reason and when hasty and incomplete legislation was more soothing to the House (of that period) than effective in carrying out its purpose. . . . The rule is closely drawn. What does the word *Solicitation* actually mean? . . . Solicitation by whom, the candidate

or by his friends? How, by word of mouth, by letter to personal friends, by general circulation, . . . or by trading of votes between groups? . . . There is solicitation and solicitation; some dignified, fair and entirely proper; some reprehensible. . . . The Council believes that in practice the rule is unenforcible, yet it has a strong and effective influence. Under this ruling, in this particular case, apparently there has been no violation, hence the supposed person mentioned in the resolution is legally eligible for nomination or election."

Improper broadcasting of misinformation relating to medicines, foods, etc.: Ordered: A protest to the Federal Radio Commissioners in the United States and in Mexico, asking restrictions upon this type of radio advertising.

Contraception and Birth Control: Various states sent in resolutions, requesting action thereon by the A. M. A. In contrast with the aloofness and very conservative action of the A. M. A. in recent years, whenever this taboo subject came into the limelight, by way of the House of Delegates, this year the House yielded to some extent —the Special Committee having ruled against the resolutions brought into this session and having offered a substitute resolution. Details on page 2363. However, in preamble it was declared that nothing in the resolutions now substituted by said Special Reference Committee could be interpreted as a declaration or action either for or against birth control. Which would appear like straddling the fence. Note that in the closing portion of the special report it's agreed that a special standing committee shall be appointed . . . "by the Board of Trustees, to study these related problems and to present at least a preliminary report to the House of Delegates A. M. A., 1936 annual session; also that the trustees be requested to appropriate the funds necessary to carry out the purpose. . . ." This topic, dragged along for years by the pros and cons, by proprietary concerns, laymen and laywomen, clerics, and especially so by those commercially interested, either in supplies or through advertising, seems almost farcical. In earlier periods the subject was strictly taboo, but now all has been changed; the people now not only practice birth control, as did some of their predecessors, but the subject and sex are now being freely discussed in pamphlets, books, magazines, even in the pulpit; the dealers now fairly openly advertise ingredients and appliances in aid of "female hygiene" or something "to allay the mental anguish of those women worried how to care for another unwelcome guest," etc. Even some border-line medical publications artfully carry on the propaganda. Last summer one of the well-known magazines devoted to fishing and hunting carried a half-page advertisement extolling the allegedly safe and sure methods of the named rubber goods, as a preventive against "infection." The hunters must have a guess what was intended. So with all this in the open, why do people practice hypocrisy by urging Congress to make void its Federal statute supposedly regulating these affairs?

The District of Columbia Medical Society: Several resolutions brought from that area suggesting the use of medical service organizations during the depression period. The opinion of some of the other delegates was that the suggestions appeared too socialistic, hence the resolutions went down the gang plank.

Specialists: Required, that membership in a state and a county medical society must be a prerequisite before any person claiming a specialty can be placed upon the approved list by our national organization.

Catgut, Purity of: Committee appointed to designate technique and requirements governing the manufacture of an approved catgut.

Dick Scarlet Fever Patent: Massachusetts opposed to the continuation of this patent. Referred to Board of Trustees.

Board of Trustees call special attention to the following three problems:

(1) Integration of the Medical Profession. Something new. (p. 2357).

(2) Foreign physicians and their entry into the U. S. A. (p. 2357). Later decided to hold in abeyance action taken earlier by A. M. A.

(3) The word "doctor" and commercial use thereof. Referred to House of Delegates with suggestion that affair should be settled on basis of state laws and the rulings made by the Federal Trade Commission.

Hygeia in C. C. C.: Resolution to effect that proper authorities be requested to place that magazine in such camps.

Special Reference Committee urged all constituent medical societies to make increasingly use of the members of the Chicago headquarters in their state programs and in their various committee activities.

Committees passing upon medical economics ask all of our physicians to read carefully the material covered by the annual transactions, year 1935. They are somewhat apprehensive that much of the valuable publications going out from the national Bureau of Medical Economics is being lost to the average practitioner. Suggest that the essence of the articles be transcribed into some

such form that they could be assimilated by the average medical reader. (Pp. 2363-4). Note also pp. 2369-70. The Ten Principles laid down at the Cleveland sessions, year 1934, may be found in the Transactions for that year, A. M. A. Journal.

The American College of Surgeons and the A. M. A. policy regarding medical practice, health insurance, etc.: Several months ago newspapers carried items to the effect that the college favored types of medical practice which were decidedly opposed by the A. M. A. At this annual session, Chairman Cary stated that in conference with the officials of the college, an amicable understanding had been reached, and that the college had no desire whatever to conduct or interfere in any way with medical practice; that all the college was concerned about was the standardization of hospitals.

(July 18th: We have just received a special letter from the chairman on legislative activities, A. M. A., from which we make some quotations: "Information coming from the committee indicates that the action of the House of Delegates at Atlantic City, in consideration of sickness insurance, has in some instances not been fully understood. The misconception has to a degree been advanced by reports in some journals and headlines in public newspapers to the effect that sickness insurance has been given broad approval by the American Medical Association. Some groups are said to have planned to act on this supposition. . . . The report of the Reference Committee of the House of Delegates has been published in the Journal, and the Special Report of the Bureau of Medical Economics will soon be available to members of the Association. It is urgently recommended that both the Special Report of the Bureau of Medical Economics, containing an analysis of the various plans at present in operation, and the report of the Reference Committee, adopted by the House of Delegates, be carefully studied before any plans are considered. . . . All proposed plans of county societies should be submitted to officers and appropriate committees of state medical societies. Before considering any program, it would also seem advisable to confer with the Bureau of Medical Economics of the A. M. A., which has the greatest opportunity to study the needs for and the varying successes of the existing experiments. . . .")

American Legion and the A. M. A.: Contacts: Chairman Cary advises that the conferences had the past two years have been very valuable; believes that a feeling of confidence and understanding between these groups has been developed. (Pp. 2364-5-6.)

R. O. T. Camps in Medical Schools, etc.: Recommends that these be restored and maintained. Such resolutions to be sent to the Federal authorities.

Counterblast Resolutions: (1) That physicians must not accept commissions from trade sales of audiometers. (2) That ophthalmologists must not give lectures to nor consult with opticians or optometrists. (3) That restrictions should be placed upon non-doctors regarding the measuring of hearing acuity—has reference to audiometers.

Committee on Foods: Out our way one rarely hears about this part of the A. M. A.'s work, though apparently the national organization is well pleased with its procedure and the results obtained therefrom. From the Handbook we learn that in the year 1934 there were submitted to the Association's committee 1,125 products, and that out of the same, only 30 were rejected. The question may well arise whether the organization should undertake this type of work? The approved lists cover varied products, and the manufacturing places of same are all the way from California to the far East, with stop-offs at such places as Minneapolis, Chicago, etc. The reply for the affirmative side might be that our organization is helping safeguard the public to a limited extent. But, if Uncle Sam, despite efforts to enforce present Federal regulations or efforts to get through Congress still more stringent laws, cannot well hold down the job, with all the power back of him, how can the A. M. A. expect to do better as regards foods, candies, condiments, breads and pop corn, etc? Here are some of the articles which have been approved by the A. M. A. and which bear its "seal of approval," concerning which seal you may read in some magazine advertisements or by way of the raucous voice of the radio: Quix-A-Wink Self Raising Flour, bleached; Fontana's Egg Noodles, fine, wide; egg vermicelli fideos; Clapp's Original Sauce; Hostess Mayonnaise; American Lady Brand Strained Beets; Davidson's Angel Food Cake; Danny Boy Hulless Popcorn; Delcia Oleomargarine; Jak 'N Jil Golden Syrup; Smith's Holsum Bread, Sliced (Alabama product); Master White Bread, Sliced, Twins; Tar Heel Bread (North Carolina product); White House Natural Brown Rice Flakes (Texas); Foodtown Rivee Pops; Buy Jiminy (a peanut bar); Baby Ruth Drops (chocolate flavor); Easy Aces Candy, etc., etc.

After some spirited voting, Dr. J. Tate Mason, of Seattle, made President-elect. A surprising feature of the later voting was the failure of Dr.

F. C. Warnshuis to secure the Speakership of the House of Delegates, a position which he held for many years, and a man who had a great many friends. Until fairly recently, Dr. Warnshuis was with the Michigan State Association for many years, but lately moved into California to act as executive secretary there. It was thought at the present sessions that possibly his failure to get the national speakership was due to the very fact that he is now a Californian and perhaps has been associated with some of those active in formulating the so-called California medical economics plan mentioned above.

The annual meeting year 1936 will be held at Kansas City, probably about the middle of May.

ALBERT W. SKELSEY, M.D.,
Secretary.

MEDICAL ECONOMICS*

DR. H. A. BRANDES,
BISMARCK, N. D.

DR. BRANDES: Your committee on Medical Economics has been asked to give a report of its activities during this year. Now I am sure that most of you, especially in the House of Delegates, are almost saturated with this subject of economics, so I will make my report very brief. I know you are all anxious, as I am, to hear the first paper on our scientific program, and I want to give our speaker all the time that is due him, so this report I shall make very brief.

The work of your committee during the past year has been directed along three lines. First, in its continuation of its efforts to have a state-wide adoption of our medical relief plan in the counties that are still having the county physician set-up; secondly, in our work in the corrective care program; and, third, in the activities which have been connected with the counties, or in the counties receiving federal funds for medical care.

I am sorry to say that our efforts for the state wide adoption of our relief plan has met with very little success the past year. There are still about fifteen counties in the state that still have the old county physician set-up. As I mentioned in our report last night to the House of Delegates, the adoption of this relief plan in the counties that still have the county physician set-up would be a fairly easy one to solve if we could get united action of the physicians in that county. It is difficult for your state committee to do anything in the way of having the commissioners accept our relief plan. They tell us, and they will tell you, that if it is possible to get that medical service for the sick, indigent and unemployed for five dollars, they can justify themselves before their constituents rather than offer to pay ten dollars, or whatever it is. They admit you are contributing a large financial sum in the way of services for medical care, but if you are willing to do it, they are willing to take that service, so it is up to the men in the counties that still have the county physician set-up, to have this united action of all of the doctors, if they wish to have the county commissioners accept their plan.

Now here is what has happened in two counties which have been called to our attention. In these two counties, we had the relief plan adopted, and for some reason, in one county, they had received relief funds and they were declared ineligible for federal funds; yet they had no bonded indebtedness, so the county commissioners decided arbitrarily they would reduce our fees fifty per cent. I don't know just what the doctors are going to do, but in one county, I believe they have accepted that. I think the physicians in this county should resist the efforts of the county commissioners.

This relief plan, which we have adopted, has been in effect in a large number of our counties for almost eighteen months. We feel sure that that plan provides better medical care for the sick and indigent and unemployed than does the county physician set-up. Therefore, I think, and we believe, that the physicians should insist that this plan be adopted because patients should receive good medical care, and then I don't believe we have an apology to make for the fee schedule which has been set down. You are doing a large amount of charity work as it is, and if we set these fees lower than we have now, it means just this, you are not giving the physician enough money to bolster up his interest in the patient. Of course, it resolves itself into poor medical service.

Now in the corrective program, I am just going to give you a few figures which may be of interest to you. This program, as all of you know, is a state-wide program for the correction of medical and dental defects in children under fourteen years of age. It was instituted on September 1, 1934, and since that time approximately $10,000 a month, possibly a little more, has come into the state for the correction of these defects in children, which is so necessary at this time, and since September 1, 1934, approximately 10,000 children have been treated for the correction of these defects. There has been paid to the physicians $40,000; to the dentists, $36,000, and glasses amounting to the sum of $10,000. I am indebted to Mr. Howe, of the Relief Administrator's Office

*An address at evening dinner in Minot, N. D., in connection with the Annual Meeting of the North Dakota State Medical Association, May 26, 27 and 28, 1935.

for these figures. Now all of this work was carried on with FERA funds. As you know allotments of these funds to the various counties was based on the relief population. In the fall of 1934, Mr. Willson, the Relief Administrator, recognized the need for Federal funds for medical care in the state, and after making a financial survey of the counties, he declared eligible for federal funds for this medical care, twelve counties. On November 1, 1934, some county which is in the southwest part of the state was declared eligible; then following that action, nine counties on December 1st; then in January, Mountrail and Burke and McKenzie, making thirteen counties. Along the latter part of February, further investigation was made and three counties were found to be ineligible for these federal funds—they were found to have no bonded indebtedness; therefore, federal funds were withdrawn.

Now, as you know, no federal funds are available for hospital care as yet, but I understand there may be a change in that after the first of July. However, the hospitals have received a small sum of federal funds in the way of laboratory fees and things of that kind. They, however, have received approximately 1,800 weeks of general nursing for the nursing service, that is, this nursing service has been supplied by the nursing service, which is under the supervision of Dr. Williams, of our State Public Health Department. You know this nursing service was organized December 1, 1933, as a CWA project. It was primarily to give relief to unemployed nurses, out of which has grown our present state nursing system. I want to say here that we have received the utmost consideration from the State Relief Administrator and his departmental heads. They have shown us every consideration and I think we are particularly fortunate in this state in having a state relief administration that is sympathetic to the medical profession. We have had the finest kind of co-operation from them. As you know, our medical plan and fee schedule was adopted without change, except the item on mileage, and there was a reason for that, because in neighboring states, the fee was set at twenty cents. That means, however, I am sure that the state relief administrator will consider a revision of the mileage, especially for winter driving when the roads and the weather do not permit the use of a car. That is a thing that some of you men have called to my attention, and I believe if we continue with federal funds for the coming winter, that Mr. Willson will give that favorable consideration. I want to say that the Federal Relief Administrator appreciates the co-operation of the medical men in the counties that are receiving federal funds. We have received very few complaints, only four or five, and I am happy to say there are only two of them affecting two men who were members of the State Medical Association.

I believe we have too many men who are still outside of the organized medical profession. I think some of these men are eligible for membership in our component societies and I would recommend to the state officers the coming year, that some effort be made to get these men into the society. I believe we can deal better with them in the Society than out, providing they have the qualifications.

Now it may be of interest to you to know the cost of medical relief. We have the figures up to the first of May and I think they are the figures for four months they have been spending federal funds. The sum paid out amounted to $110,000 for January, February, March and April. Of this sum, $70,000 was paid to the physicians; $21,000 to dentists, and $19,000 to nurses, hospitals, medications, *etc.* Now bringing that down to small figures, it means that the number of patients treated per month per county amounted to 285; the average cost per patient in each county per month, $11.50; average cost per county per month, $2,575. The sick load of the relief population averages about 5.2, so that if you have 4,000 people on the relief rolls, our figures here would give us approximately 200 patients that would require medical care. Those figures were interesting to me, because we had figures for six months from July 1st to December 1st in another county which was being paid for by county funds, and the number of patients per month paralleled this. However, the cost per patient was somewhat less, almost two dollars. It may be that some of this is due to the fact that these are winter months and pneumonia entered into it. We had rather a large number of cases of pneumonia, which may account for this increase to $11.50 per month.

In the immunization program that was carried on under the plan which was provided by the state medical association, $10 per clinic day to take care of the children of parents on relief rolls, that project or program has been completed in practically all of the counties of the state. There may be one or two counties in which the work has not been completed but in this work 51,000 children have been immunized and the doctors were paid for their services in the approximate sum of $4,100.

In conclusion, I just want to give this thought

to you: The committee on economics feels strongly that we as an organized medical profession should be prepared to solicit information and be prepared to meet and make the necessary adjustments in this rapidly changing order of ours.

THE MEDICAL CARE PROGRAM*

DR. M. V. ZIEGLER
U. S. Public Health Service
WASHINGTON, D. C.

I want to assure you that it is a pleasure for me to be here, and meet with you upon this occasion. I am very thankful for the opportunity of having heard this able presentation by your president, and I trust I may bring to you some information in connection with the proposed medical care program, which is now being considered. I also want to assure you, Mr. President, that insofar as the medical fraternity and the federal government is concerned, there is not much difference between our viewpoints.

I was very much impressed with your president's statement that in the beginning, in providing for relief throughout the United States, that the director of that relief, Mr. Hopkins, soon recognized that medical care was an essential and basic need. Mr. Hopkins started out originally with the thought that his first consideration was merely feeding people, to provide for the human needs, food, shelter and clothing, but it was not very long until he recognized the need for medical care. I am sure it is gratifying to you, as it is to me, that he recognized medical care as a basic need.

Medical care traditionally has always been supported on the principle that each person should receive in accordance with his needs, and each should pay in proportion to his means, but the sliding scale of fees among general practitioners no longer prevails. However, it does, I am sure, prevail insofar as our special fees are concerned in the field of surgery. Insofar as the general practitioner is concerned, very little in the way of sliding scale of fees obtains, inasmuch as the fee for office calls, fees for home visits, fees for night calls are for the most part standardized among the economic groups of people whom we serve. Whenever there is revision in the fee schedule, I am sorry to say, it is always downward from the accepted prevailing fee schedule.

*An address at evening dinner in Minot, N. D., in connection with Annual Meeting of the North Dakota State Medical Association, May 26, 27 and 28, 1935.

Since medical service is regarded as a personal affair, the payment for medical service has always been a personal obligation. Community responsibility has been accepted only in those cases where the nature of the illness involves danger to other persons. For example, in order to protect society, the state has recognized the responsibility of providing medical care for a certain group of our people, viz., those who are insane; it is recognized as a community obligation where isolation is required in connection with the control of communicable diseases, and particularly in the care of the tuberculous. And yet medical care is out of reach of millions of families in addition to those accepted as the indigent class.

Tax funds are already extensively used as a means of distributing the cost of some kinds of medical service for all people and complete medical care for certain groups of population, including health departments, financed by local, state or federal government. This is also true in connection with the medical service at state prisons where all the cost is paid out of tax funds. Much more than one-half of the appropriations for general hospital service is provided by cities and counties for the maintenance of these institutions. Some states have even gone so far as to subsidize hospitals; that is particularly true in the State of Pennsylvania.

Now there is no substantial difference in our opinion as to the proper use of these funds, whether for the prevention of disease or for the care of diseases, which are communicable in nature, such as tuberculosis. The care of mental cases requiring prolonged treatment should be paid for from tax sources. As an existing public policy, the tax funds are already being provided to care for the tuberculous in various hospitals.

There is a wide divergency in the economic resources of communities; we can predict with a great deal of accuracy as to the amount of medical care required in any given community. The ability of a community to provide medical care depends entirely upon the resources of the community. Medical needs arise ordinarily in proportion to the size of the population. However, the ability to pay for medical care is in proportion to the financial resources of the community.

In many of our states, in areas where the population is widely scattered, adequate medical care is a real problem. Canadian provinces to the north in Saskatchewan have met this

problem by financing certain physicians to go into communities and render medical care through the use of tax funds to all of the people in that particular area, in addition to carrying out certain public health functions. The lay and professional groups concerned with medical service should strive to bring about the best medical care which the state or community can maintain; any plan for medical care must give ample representation to the physicians and other professional groups.

In formulating a medical care program, the county, city or state health department should be represented and should assume some leadership in providing medical care. Some health officers, or boards of health, may be able to deal wisely with the broad questions which adise in connection with medical care with the co-operation of community organizations, but whether the health department should take the leadership in formulating plans for and solving the problems of medical care must be determined by the local conditions, but the participation of the department in some degree is essential.

The present emergency must be faced, gentlemen. The present plans involve providing medical care, both corrective and preventative, for 20,000,000 or more persons throughout the United States, who are wholly or largely dependent upon public funds for their existence. When only the essentials are given, or work provided to the extent of a minimum subsistent wage only, it is impossible for such persons individually to budget against the cost of any serious illness.

It is obviously unfair, even if practical, for this profession, whose duty it is to administer to the sick and who have had the care of sick persons under their supervision, to furnish as charity the amount of care needed. Those employed on work relief projects under this new program will not be able to maintain themselves in providing medical care. Furthermore, that group which we speak of as unemployables, which it is the purpose of the administration to turn back to the respective states, will be a further burden upon the community. These unemployables, who are returned to the states and localities for support, will need more medical service than the general population. Local resources, because of the large relief burden, will be less than heretofore, and medical care is likely to be curtailed. As your president inferred, if there is some assurance on the part of the government, whether federal or state, to establish a definite medical care program, there is probably some hopeful outlook.

It is believed that the federal government should continue to assist the states for the time being to bear the cost of medical care of persons on relief rolls. The federal government has a precedent for assuming responsibility for medical care under the Federal Emergency Relief regulations. In planning this medical care, we have adhered continually to the accepted principle of patient-physician relationship. The plan under which medical care has been administered during these years of depression under the federal government provided that in every state those physicians who should be eligible to participate in the medical care program, were those physicians licensed to practice medicine in that state.

I have on my desk in Washington a copy of a letter from your attorney general in this state who has defined who is eligible and what groups are eligible to practice medicine in North Dakota, and daily we are besieged in Washington with reams of petitions from the various healing groups to the President, to Mr. Hopkins, and to the various Congressmen, to change the rules and regulations under which federal funds have been made available to provide medical care so as to give recognition to every branch of healing and thus aid different members of society.

Let me assure you, plans have been formulated with due and careful consideration, and one of the main principles embodied in the rules and regulations governing medical participation and medical care recognizes the traditional family-physician relationship. It is planned to continue the work relief program; approximately four billion dollars has been set aside to provide for federal projects, but up until this very moment, no provision has yet been made to provide medical care for the families of persons on work relief project.

We, as members of the profession, feel that ordinarily medical service, since it is an individual and personal service, cannot be made as a work relief project. In other words, to utilize physicians who are on relief, or those physicians who are on near relief, would deprive our people, who are working on relief projects, of receiving the very best medical service, which might be available in the community, so therefore we have opposed making a work relief project out of medical care, and are advising the President and Mr. Hopkins,

and others concerned, that an exception should be made in connection with the work relief program; that medical care should continue as a direct relief activity, and not as a work relief project. It is hoped that such an exception will be made, not only to provide medical care for these individuals who are going to be put to work on the various relief projects, but also the families of such workers. Medical care should be continued under the same general plans as heretofore for that group of individuals who are to be eventually turned back to the state, which we recognize as the unemployables.

We have estimated that the cost of medical care for the work relief project group will amount to $65,000,000. It is anticipated that part of this fund will be turned over to the various states to provide medical care in conformance with the case load. We are recommending the continuation of the medical care under the present regulations.

I want to say, in conclusion, that insofar as the fee schedules are concerned, we have, in every instance, referred every fee schedule to the state. Your representatives have worked out, with the state administrator, a fee schedule for which you are willing to render service to the relief administration. The fee schedule in effect here in this state is an agreement between you and the state relief administrator. We have today in the United States just as many fee schedules as we have states. It is true some items are comparable, but the fees that have been set down are results of these agreements.

So in conclusion, Mr. President, I want to assure you of our co-operation. We know, of course, there are twenty million people in the United States who must be provided with medical care, and we as members of the profession have that service to perform. We feel, of course, we should be paid for that service, so we want to continue, and will at least continue the present tradition, the family-physician-patient relationship.

DISTRICT AND COUNTY ROSTER

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Barnes, N. J. ..... Fargo
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Bray, R. B. ..... Fargo
Burton, P. H. ..... Fargo
Clay, A. J. ..... Fargo
Darrow, Frank I. ..... Fargo
Darrow, K. E. ..... Fargo
Dillon, J. G. ..... Fargo
Evans, L. J. ..... New York City
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Floew, A. T. ..... Fargo
Fortin, H. J. ..... Fargo
Fortney, A. C. ..... Fargo
Foster, G. C. ..... Fargo
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Oftedal, Sverre ..... Fargo
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Patterson, T. C. ..... Lisbon
Pray, R. E. ..... Fargo
Richter, E. H. ..... Hunter
Rindlaub, Elizh. P. ..... Fargo
Rostel, Hugo ..... Fargo
Rothnem, T. P. ..... Fargo
Sand, O. ..... Fargo
Skelsey, A. W. ..... Fargo
Stafne, W. A. ..... Fargo
Stolinsky, A. ..... Lisbon
Swanson, J. C. ..... Fargo
Tainter, R. ..... Fargo
Tronnes, N. ..... Fargo
Watson, E. M. ..... Fargo
Weible, R. E. ..... Fargo
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Arneson, A. O. ..... McVille
Beek, R. H. ..... Lakota
Call, A. M. ..... Rugby
Drew, G. F. ..... Devils Lake
Engesather, J. A. D. ..... Brocket
Fawcett, J. C. ..... Devils Lake
Fawcett, N. W. ..... Devils Lake
Fawcett, W. C. ..... Starkweather
Graham, J. D. ..... Devils Lake
Greengard, M. ..... Cando
Horsman, A. T. ..... Devils Lake
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MacDonald, J. A. ..... Cando
McGurren, C. J. ..... Devils Lake
McIntosh, G. J. ..... Devils Lake
McLean, Neil ..... Devils Lake
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Olafson, K. ..... Cando
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Verrett, B. D. ..... Rolla
Vigeland, J. G. ..... Brinsmade
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GRAND FORKS DISTRICT MEDICAL SOCIETY

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SECRETARY
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TREASURER
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Bentzen, Olaf ..... Grand Forks
Benwell, H. D. ..... Grand Forks
Campbell, R. D. ..... Grand Forks
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Countryman, J. E. ..... Grafton
Deason, F. W. ..... Grafton
Eggers, Aug. ..... Grand Forks
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French, H. E. ..... Grand Forks
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Mulder, J. L. ..... Cavalier
Mulligan, T. ..... Grand Forks
Mulligan, V. A. ..... Langdon
Muus, H. O. ..... Grand Forks
Needles, A. S. ..... Dragon, Utah
O'Keefe, H. ..... Grand Forks
Panek, A. F. ..... Milton
Peake, M. F. ..... Grand Forks
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Ruud, M. B. ..... Grand Forks
Rystad, O. H. ..... Grand Forks
Stratte, J. J. ..... Grand Forks
Stromberg, G. E. ..... Langdon
Thompson, A. Y. ..... Larimore
Thorgrimsen, G. G. ..... Grand Forks
Tompkins, C. R. ..... Grafton
Wagar, W. D. ..... Michigan
Waldren, H. M., Sr. ..... Drayton
Waldren, H. M., Jr. ..... Drayton
Weed, F. E. ..... Park River
Williamson, G. M. ..... Grand Forks
Witherstine, W. H. ..... Grand Forks
Woutat, H. G. ..... Grand Forks
Woutat, P. H. ..... Grand Forks
Youngs, N. A. ..... Grand Forks
*Honorary

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AbPlanalp,Ira S.....Williston
Craven, J. P.....Williston
Dochterman, L. B.....Williston
Hoeper, P. G. E.....Williston
Johnson, P. O. C...Watford City
Jones, C. S.....Williston
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MINNEAPOLIS, MINN., AUGUST 15, 1935

ANTIVIVISECTION

We presume it was because of pain and suffering to the lower animals that antivivisectionist societies originally were formed, and for this there may have been some excuse. Since the advent of anesthesia, however, there seems to be little reason why they should continue their propaganda.

Surely the antivivisectionists must know that it is not the object and purpose of these experiments to inflict pain. They must know, too, that precautions are actually taken in most cases to prevent the association of pain if for no other reason than that it interferes with the results to be derived from the experiment at hand.

Men of science do not experiment on the lower animals only, but often submit themselves to similar tests in their eagerness to advance our knowledge. We subscribe to the statement in the abstract that life is sacred, but even the highest form of life must be prepared at times to make the supreme sacrifice if our civilization is to endure.

Someone has suggested that to be entirely consistent, antivivisectionists should also be complete vegetarians; and so long as we continue to eat the flesh of other animals, we should not hesitate to use them to expand medical science and to promote human health and longevity.

A. E. H.

THE RADIO NOSTRUM RACKET

In a well balanced and conservative article with the above title in the July 17, 1935, issue of *The Nation,* Mr. Richard Lee Strout, Washington correspondent of the *Christian Science Monitor,* dwells in detail on the hearings recently held before the Federal Communications Commission in Washington. At this hearing testimony was given by Dr. Arthur J. Cramp, Director of the Bureau of Investigation of the American Medical Association, who made startling disclosures regarding the contents of widely advertised patent medicines, with especial reference to those most freely publicized by means of the radio, such as Alka-Seltzer, Peruna, Crazy Crystals, Willard's Tablets and Ex-Lax. These were merely cited as illustrative examples, "to give a fair cross-section of the patent-medicine advertising as it goes on the air today," said Dr. Cramp, who gave informative analyses made in the laboratories of the American Medical Association to show not only the worthlessness but in many instances the actual harmfulness of the contents of these nostrums and many others like them.

As a result of this investigation the charges against sixteen of the twenty-one stations cited were dropped after these stations entered a plea of ignorance of the nature of the nostrum whose qualities they were lauding and on their agreeing to desist from further participation in the future.

Adjourned hearings on the other five stations were adjourned until October 3.

It is encouraging to see that at least some measure of activity is being shown in matters of this sort. The nauseous pollution of the air by advertising of this character has long been a source of annoyance and disgust to the medical profession but it has had to wage a one-sided fight. It has not been supported by the newspapers to any adequate degree, for rather obvious reasons. The people who put out these nostrums are also heavy newspaper advertisers.

There are two very interesting side lights in connection with the main question. The Columbia Broadcasting System has voluntarily taken steps to keep its own programs free from objectionable material hereafter. And it is surely very gratifying that a correspondent for the leading Christian Science periodical can see his way clear to giving strong commendation to the efforts of the American Medical Association in helping to rid the air of this unpleasant contamination.

G. C.

INDECISION

Indecision is one of the most destructive attitudes that a physician can show in the presence of his patient.

It is readily admitted that hesitation is preferable to the reckless agressiveness that is born of a careless, lighthearted indifference for consequences. Rash decisiveness is foolhardy and pernicious. Everyone expects the delay that a thorough examination entails, but there need be neither hesitation nor indecision in such delay. A sudden snapshot diagnosis is not necessary. First impressions need not be continuously adhered to and defended. A studious attitude from beginning to end is appreciated by the patient. An alert watchfulness for change is counted upon as routine, and the resultant shift of treatment based upon such findings does not destroy confidence.

It is a wavering of the mind, vacillation of intent and purpose, inexplicable change of attitude and action resolving itself into uncertainty and indecision that robs the patient of the faith within. Faith is a precious something that may be cultivated like the growth of disease resisting powers from autogenous vaccines, if the weed of indecision be not allowed to stifle and destroy.

A. E. H.

NEWS ITEMS

Dr. C. L. Melby, Owatonna, Minn., returned this month from a ten weeks trip to Europe.

Dr. and Mrs. Henry Schmitz, Chicago, are spending the summer months at Alpine, Montana.

Dr. R. E. Rock, was recently married to Miss Beryl Canfield, both being residents of Minneapolis.

Dr. T. F. Hammermeister, New Ulm, was recently married to Mrs. Pearl L. Rexford of Minneapolis.

Dr. R. H. Haynes, Lewisville, has moved to Blue Earth, Minn., where he will continue his general practice.

An addition to cost from $15,000 to $25,000 will be started at once for the state tuberculosis sanitarium at Galen, Mont.

Dr. O. C. Rathmanhas returned to his office at Billings, Mont., after spending several weeks on a vacation in California.

Dr. A. N. Gunz, Ruthton has moved his office to Lindstrom, Minn. This now leaves Ruthton without a resident physician.

Dr. Horace DeLien, Herreid, is now located at Eureka, S. D., and is associated with Dr. E. E. Stephens of that village.

Dr. Charles Vandersluis, a graduate of the University of Minnesota, has recently opened offices for general practice at Bemidji, Minn.

Dr. R. B. Graves, a recent graduate of the University of Minnesota, has joined the staff of the Medical Block Clinic, at Red Wing, Minn.

Dr. J. P. Nesselrod, formerly of the University of Pennsylvania, has joined the staff of the Mayo Clinic, as an assistant in the section on proctology.

Dr. E. M. Anderson has opened offices for general practice of medicine at Lamberton, Minn. The doctor is a recent graduate of the University of Minnesota.

Dr. D. L. Donovan, has returned to Albert Lea, Minn., and will be associated with Dr. H. D. Burns. Dr. Donovan is a graduate of the University of Minnesota.

Dr. L. J. Monson, Hendricks, Minn., was recently married to Miss Eunice Johnson of St. Paul. Dr. Monson is a graduate of the University of Minnesota.

Two new physicians have located at Aitkin

and opened offices for general practice, Dr. C. E. Carlson, Ortonville, Minn., and Dr. N. A. McGreane, Darlington, Wis.

The July meeting of the members of the Northwest District Medical Society was held at Minot, N. D., at the country club, with a choice chicken dinner being served.

C. M. Austin, Sioux Falls, was elected president of the South Dakota Hospital Association for the coming year and Sioux Falls was chosen for the next annual meeting.

Dr. R. A. Weber, formerly of Jackson, Mich., is now associated with Dr. R. A. Kelly, Mitchell, S. D. Dr. Weber is a graduate of Northwestern University in the class of 1924.

Dr. Morris Fishbein, editor of the American Medical Journal, Chicago, will be a guest speaker at the annual meeting of the Southern Minnesota Medical Association at Austin, Minn., on August 27.

The first sanatorium in the United States for the exclusive treatment of tubercular Indians has been opened at Walker, Minn. It was built by the government at a cost of $250,000, and has a capacity of 120 beds.

Dr. J. S. Gilfillan, St. Paul, was seriously injured in an automobile accident recently. The doctor being 67 years of age, it is feared that he will not be able to stand the severe cuts and bruises that he received.

The Wright County Medical Society, held their summer outing and picnic at Annandale, Minn., this month, with a large attendance, the Ladies Auxiliary being their guests. Dr. R. W. Hart, Monticello, is president of the society.

Dr. F. W. Bullen, who has been in active practice at Hibbing, Minn., for several years, dropped dead while out playing golf at their country club. The funeral was largely attended and under the charge of the Masonic lodge.

The Wabasha County Medical Society held their 67th annual meeting at Lake City, Minn., on July 11, and elected the following officers: Dr. C. G. Orchner, Wabasha, president; Dr. B. A. Flesche, Lake City, vice-president, and Dr. W. F. Wilson, Lake City, secretary.

Dr. J. F. D. Cook, Langford, S. D., associate editor of THE JOURNAL-LANCET, is confined to his home, the result of an auto accident, which resulted in many bad bruises on his face, legs and chest, but fortunately, no bones were broken. His many friends scattered all over South Dakota, will wish him a speedy recovery.

CLASSIFIED ADVERTISEMENTS

WANTED

Want used Trial Case, Test Type Cabinet, Perimeter. Give description and price. Address Box 111, care of this office.

X-RAY EQUIPMENT

Complete radiographic X-ray equipment, late model, Coolidge tube, in perfect condition. Will install it in your office. $375.00. Address Box 117, care of this office.

PRACTICE FOR SALE

Excellent location in best farming community in Minnesota. Fine up-to-date town and country. None better. Will sell for invoice. Must act quick. Address Box 115, care of this office.

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To take charge of a good general practice in a town of 1,000 in southeastern South Dakota for six months or a year. No investment. Competition just right. Address Box 116, care of this office.

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Technician with Northwestern University training and four months' hospital experience desires position in a hospital or with a physician with private practice. References supplied. Address Box 114, care of this office.

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desires position, preferably in St. Paul or Minneapolis. Nine years' experience in office work and nursing assistance in large clinic and private office. Reasonable salary. References on request. Address Box 113, care of this office.

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A young man to take care of practice for three to eight weeks in western North Dakota. General practice only. Give full references in first letter. State salary expected and the date you can start work. Address Box 110, care of this office.

EXCELLENT OPPORTUNITY

for beginning physician to share suite of offices now occupied by physician and dentist. Individual treatment room and laboratory. New office and store building. Best business and residential district. Address Box 91, care of this office.

FOR SALE

My residence of seven rooms, arranged for physician's offices in Alexander, N. D. Good surrounding farming country, and no doctor located here at present. Will sell at very reasonable price, with easy terms of payment. Address Box 118, care of this office.

The JOURNAL LANCET

Minneapolis, Minnesota
September 1, 1935

Vol. LV, No. 17
New Series

The Treatment of Compound Injuries of the Hand*

Sumner L. Koch, M.D.
Chicago, Ill.

BEFORE one begins the treatment of an injured hand it is obvious that he must arrest hemorrhage, combat the shock which may be present, and that he must make a careful examination to determine both the presence and extent of injuries in other parts of the body and exactly what has occurred in the injured hand. These facts hardly need emphasis; yet one of the most common sins of omission that one sees in connection with injuries of the hand is the failure to make a careful examination of the hand before operative treatment is carried out, and so, the failure to recognize the presence of serious injuries, particularly of nerves and tendons, until the most opportune moment for surgical treatment is past.

In the actual treatment of an injured hand, three considerations seem to us of primary importance, as eminently desirable and surgically sound. They are: first, careful cleansing of the wound and conversion of the contaminated wound into a clean wound; second, repair of the injured structures; third, closure of the wound. Such treatment is not always possible, and yet if one constantly strives to accomplish these things, it is surprising how often it can be done.

In the cleansing and pre-operative preparation of a compound wound, seen shortly after the injury has been sustained, we have come to use nothing but soap and water, except for the occasional preliminary use of benzene or some similar fat solvent for surfaces covered with grease or greasy dirt. In this procedure theory has followed practice—not only our own practice but that of many men in many parts of the world. We learned some years ago as, did many other surgeons, that wounds which were vigorously cleansed and vigorously "sterilized" with iodine, alcohol, and other antiseptics did not heal kindly, often became infected, and that complete healing was frequently delayed by the presence of persistent sinuses. As methods of pre-operative preparation became simpler and less drastic the results improved, and eventually we came to realize that if we did not traumatize the delicate living tissue exposed in an open wound, either mechanically or chemically, and if we used as our cleansing agent one which would not injure living tissue our chances of rendering the wound surgically clean and of securing healing by primary union were greatly increased.

The use of soap and water to cleanse the delicate tissues of an open wound seems to us entirely logical. We have used soap and water for centuries to cleanse the outer surface of the body simply because it is the most effective and at the same time the least injurious method at our command. It seems reasonable, therefore, to use it for cleansing the delicate tissues underneath the body surface which have not the re-

*From the Department of Surgery, Northwestern University Medical School. Part of a paper on "Injuries of the Hand" read at the 13th annual meeting of the Great Northern Railway Surgeons' Association, Glacier Park, Mont., July 1, 1935.

sistance to injury which skin and, to a less extent, mucous membrane have developed by constant exposure to the outside world. Unfortunately, in past years we have concentrated so much attention on infection and the introduction of bacteria into an open wound that we have lost sight of two simple but important facts: first, that any chemical substance at our command at the present time which kills bacteria kills living tissue as well†; and secondly, that if the vitality of the tissues is not diminished by mechanical and chemical trauma, these tissues can withstand and overcome bacteria if the bacteria are not too numerous and not of overwhelming virulence.

In preparing an open wound for operation it is our custom to cover the wound itself with sterile gauze and first cleanse a wide area around the wound. Hairy surfaces are shaved, and the skin made as clean as possible. Finally the wound itself is gently, patiently and thoroughly cleansed with soap and water applied with sterile gauze held in gloved hands. If necessary, the wound edges are held apart with sterile retractors so as to insure cleansing of the deepest portions of the wound. It is only by patience, thoroughness and gentleness that one can convert a contaminated wound into one which is surgically clean and which can be closed with safety.



(a) (b) (c)

FIGURE 1

Glass cut of volar surface of left wrist with division of median nerve and superficial flexor tendons. Soap and water cleansing, immediate nerve and tendon suture, and accurate closure of wound. Healing by primary union.

(a) (b) (c) Appearance of hand on third day; hand splinted in semiflexion at wrist so as to relieve tension on sutured nerves and tendons.

The next step is excision of devitalized tissue and repair of injured tissues. The excision of hopelessly injured tissues—débridement—needs no comment. Repair of injured tissues—the reduction of fractured bones, the repair of torn ligaments and joint capsules, the suture of divided nerves and tendons (Fig. 1)—logically follows the conversion of a contaminated wound into a clean wound. The technique of these procedures (Figs. 2, 3) does not need to be described here; the importance, however, of the surgical principles involved cannot be overemphasized, and needs to be stressed for our students and interns more than it has been in the past.

†To avoid confusion one must distinguish between bactericidal agents like the antiseptic of Lister's day—phenol, and bacteriostatic agents, such as many of the dyes which are so widely advocated as antiseptics at the present time. A bacteriostatic agent may be of little real value in the presence of virulent organisms, for if the dye is dissolved or neutralized the organisms can again resume activity.

An interesting study of the problem of chemical sterilization is that of Ralph O. Clock, entitled "The Fallacy of the Chemical Sterilization of Catgut Sutures" (Surg., Gynec. & Obst., 1933, vol. 56, 149-161).

He says, in part, in a summary of his work:

"In this investigation, which extended over a period of two and one-half years, several thousand catgut sutures were prepared from 334 lots of catgut. Twenty-seven different chemical compounds were used for treating these various lots of catgut under a wide variety of conditions, in an attempt to bring about chemical sterilization; the various chemical treatments having been applied to catgut ribbons, to raw catgut strings, as well as to artificially infected catgut.

"The chemical compounds used in this research study included mercurochrome, mercurophen, merthiolate, metaphen, potassium-mercuric-iodide, hexylresorcinol, tribromresorcinol, orthophenylphenate, ethylhydrocuprene, tribrombetanaphthal, copper cyanide, copper chloride, copper sulphate, copper sulphate plus methylene blue, zinc sulphate, peppermint oil, oil of tea tree (Melaleuca alternifolia), hydrogen peroxide, malachite green, pyridium, iodine, iodine plus potassium iodide, myodine, parachlormetacresol, diacetoxymercurioorthocresol, parachlorphenol, and chlorthymol ester. . . .

"Bacteriological tests, applied to commercial catgut sutures containing a large amount of a mercury compound, have shown that arrested development of bacteria within the catgut is brought about through the bacteriostatic action of the mercury compound. These tests have also proved that removal of the mercury compound from the sutures, by means of a suitable neutralizing fluid, reactivates the bacteria which then are able to grow in the culture medium.

"None of the 27 chemical compounds studied in this investigation was found to have reliable or uniform sterilizing action on catgut; for in no case did all lots of sutures, sterilized with any one of the chemicals or a combination of the chemicals, prove to be entirely free from living bacteria."



(d) (e) (f)

(d) (e) (f) Result three months later. At that time there was already some return of sensation in the area of median nerve distribution and partial return of function of the opponens pollicis, the muscle which helps to rotate the thumb so that it faces the fingers and which is supplied by the median nerve.

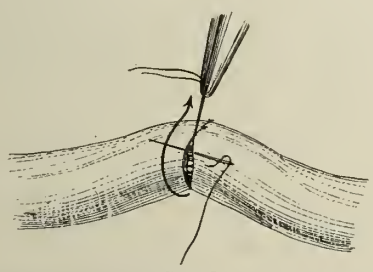


FIGURE 2

The technique of nerve suture. Still better than the needle illustrated is the swaged suture which enables one to carry only one thickness of suture material through the delicate epineurium, the only portion of the nerve which it is permissible to include in the suture line.

When the injured structures are repaired the final step is closure of the wound. It seems entirely illogical to cleanse a wound, to repair injured structures and then leave the wound exposed to the infection which will inevitably enter it from the adjacent skin and from the outside world if it is left open for only a few days. If there has been little loss of skin and subcutaneous tissue the closure of the wound offers no difficulty. In other cases it may be exceedingly difficult. The patient with extensive burns is a familiar example of one in whom it is exceedingly difficult to apply the principle of immediate closure of the open wound. We are greatly indebted to Davidson for developing a simple method of accomplishing this much desired result. Without dwelling further on the treatment of burns, I would only like to suggest that if we keep clearly in mind the principles involved—cleansing of the wound, and conversion of the open wound into a closed wound by the simplest possible method and one which does least injury to the exposed body tissues—we will avoid useless and perhaps acrimonious discussions concerning the relative value of different methods which after all represent only a difference in details of technique.

With injuries other than burns in which the loss of skin and subcutaneous tissues has been so great that apposition of wound edges is impossible covering tissue must be secured from some other part of the body. In such cases the use of a graft of intermediate thickness, of a free full thickness graft (Fig. 4) or of a pedunculated flap (Fig. 5) may afford a solution of the problem. The important thing is that the principle should be kept in mind, for it is the thoughtful surgeon who recognizes the "psychological moment," and who does not have to regret when the most opportune time is past that the possibility of closure of the open wound by a graft or flap did not occur to him.

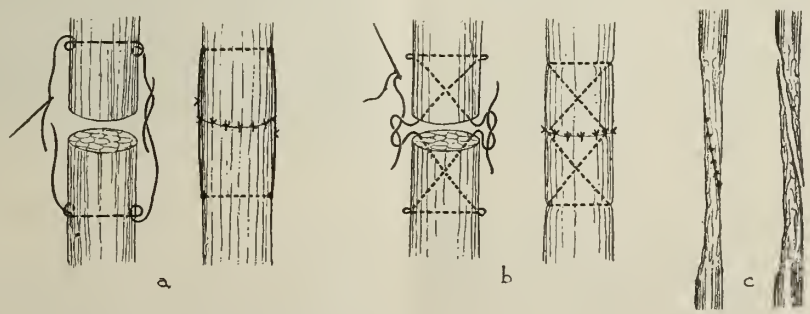


FIGURE 3

The technique of tendon suture.

(a) The method of choice in that it leaves free from foreign body irritation that portion of the tendon where rapid and uninterrupted growth of tendon fibers must occur if firm union is to take place.

(b) An alternative method which is often successfully used, but which experimentally does not give as favorable results as method a.

(c) A still less desirable method of tendon approximation, which may be necessary when the excision of fibrosed and fragmented tendons would make end-to-end apposition of the remaining portions impossible, and when the length and difficulty of the operation make the use of tendon grafts inadvisable.



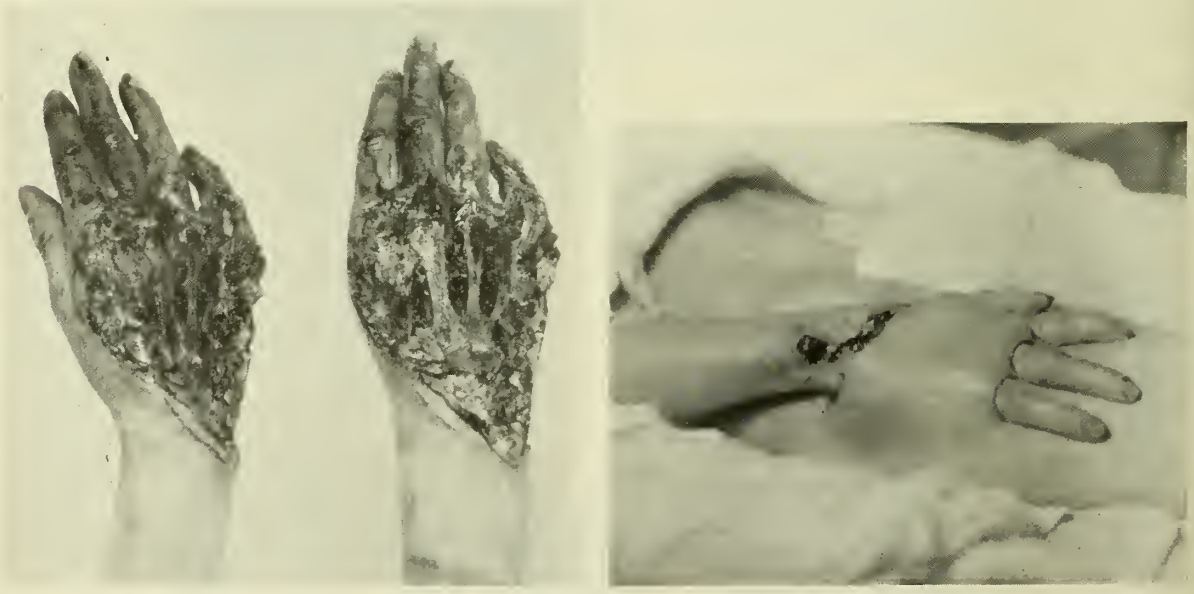
(a) (b) (c) (d) (e)

FIGURE 4

The use of free full thickness grafts completely dissected away from the abdominal wall and sutured immediately after the injury over the raw surfaces left by a crushing wound of the dorsum of the metacarpus and of the ring finger.

(a) (b) Immediately after injury; the lacerated and torn extensor tendons are visible over the proximal portion of the metacarpus.

(c) (d) (e) Result three months after operation. Healing took place by primary union except over one small area where the larger graft lay over bare tendons and where its blood supply was therefore inadequate. Over the granulation tissue which eventually covered this area a second small gratt was placed four weeks after the primary operation.



(a) (b) (c)

FIGURE 5

The use of a pedunculated flap to cover the dorsum of the hand six days after a scraping injury which involved the metacarpal bones and all the tissues superficial to them. (Courtesy of Dr. Michael Mason.) Immediate soap and water cleansing. Application of flap delayed because critical condition of patient made administration of anesthetic immediately after injury inadvisable, and because a severely comminuted supracondylar fracture of the left arm further complicated the problem of treatment.

(a) (b) Immediately after injury.

(c) Hand two weeks after amputation of little finger and insertion of hand under pedunculated flap on anterior surface of right thigh.

NOTE—The technique of the application of a free full thickness graft and of a pedunculated flap has been described in a paper on "Contractures Due to Burns" published in *The Journal of the American Medical Association*, January 26, 1929; that of nerve and tendon suture in a paper on "Division of the Nerves and Tendons of the Hand" published in *Surgery, Gynecology and Obstetrics*, January, 1933.

TUBERCULOSIS: ITS EVOLUTION, TREATMENT AND PREVENTION*

C. A. Stewart, M.D.†
MINNEAPOLIS

The First Infection Type of Tuberculosis

A FIRST infection with virulent tubercle bacilli initiates a connected series of important pathologic changes certain of which collectively form the picture of a distinct clinical entity designated currently as the primary or first infection type of tuberculosis. After the evolution of this condition starts, it consistently progresses through successive developmental stages, and no measures are known to man by which the process can be made to deviate from a very definite, fixed and seemingly predetermined course.

Immediately following an initial deposit of tubercle bacilli into the tissues an active process of dissemination begins with the result that organisms soon invade numerous regions of the body. In animal experiments bacilli can be recovered from practically all parts of the body within one hour after the pleural cavity is infected.[1] The rapidity and the extent with which bacillary metastasis from the primary focus occurs in man is not known in detail. Organisms have been recovered from the gastric contents of an infant with intrathoracic infection during the pre-allergic stage of primary tuberculosis,[2] and in addition, tuberculous involvement of a few or many lymph nodes related regionally to the primary lesion is a common finding. A significant parallelism seems to exist, therefore, between observations on man and lower animals, which suggests by analogy that in each instance a wide spread dissemination of organisms occurs shortly after the initial infection is deposited. Thus clinical information combined with experimental findings indicate that the pathologic frame-work of human tuberculosis of the first infection type regularly includes one or more primary foci and their numerous metastatic subsidiary lesions, all of which develop shortly after the first infection is laid down.

Early in the stage of bacillary metastasis, neutrophilis phagocytose, surround and group the organisms, and by this process of focalization the neutrophils determine the permanent locations of the multiple tubercles that comprise the primary complex.[3] Subsequently the neutrophils and bacilli are engulfed and surrounded by monocytes, which in turn become converted into epithelioid cells through the influence presumably of the lipid content of the tubercle bacillus. The preliminary cytologic changes leading to the formation of tubercles comprised of epithelioid cells require less than twenty-four hours following an intravenous administration of organisms to rabbits, to approach a fair degree of completion. The rapidity with which experimentally produced primary tubercles acquire typical characteristics suggests the probability that during the symptomless pre-allergic stage of primary tuberculosis in man, the lesions caused by a first infection reach a mature stage of development.

At the end of this preliminary symptomless period of three to eight weeks duration, the patient develops a fever and becomes sensitive to tuberculin. The fever proves to be transitory, as a rule, whereas tuberculin sensitivity persists for years. The time of the appearance of these two phenomena probably coincides rather closely with the initial development of caseation in primary tubercles. Accompanying or immediately following the establishment of these changes, the pulmonary lesions may become demonstrable on x-ray films as the result presumably of perifocal allergic reactions. After the infiltrations attain full development, no gross alteration in their size and density can be detected on the film for several months. In time, however, the lesions begin to undergo a progressive process of resolution which slowly reduces the infiltration to fibrotic or calcified scars.

Death of all tubercle bacilli present in primary tuberculous lesions and the disappearance of tuberculin sensitivity marks the complete healing of the first infection type of tuberculosis and the termination of its evolution. Virulent organisms tend, however, to survive for years in primary lesions, and allergy endures for decades. Thus, a long continued smoldering activity[4] rather than a prompt complete healing is typical of primary tuberculosis.

The first infection type of tuberculosis usually runs a mild retrogressive course and seldom causes death (less than .5 per cent of heavy first infections lead to death according to the Lymanhurst data). Recovery also is the rule even in cases with large primary pulmonary infiltrations which produce distressing symptoms over a considerable period of time.

The importance of tuberculosis of the first infection type resides mainly in the fact that an initial contamination with tubercle bacilli not only produces the foci from which re-infection

*Read before the Fifty-fourth Annual Session of the South Dakota State Medical Association, Pierre, S. D., May 13-14-15, 1935.

†Department of Pediatrics, University of Minnesota, Minneapolis, Minnesota, and Lymanhurst Health Center.

varieties of the disease of endogenous origin may arise, but it also creates a susceptibility to phthisis and simultaneously establishes the mechanism of tuberculin sensitivity essential doubtless for the special tendencies displayed by re-infection forms of tuberculosis to feature progressive tissue necrosis and a high death rate. As compared with phthisis, the pulmonary variety of primary tuberculosis is a relatively unimportant public health problem.

Tuberculosis of the Re-infection Type

The initial appearance of new tuberculous pathology outside the limits occupied by the original primary set of lesions marks the onset of tuberculosis of the super or re-infection type, of which several clinical varieties are recognized purely on the basis of which organ or tissue is involved. The onset of these several secondary conditions, however, may complicate primary tuberculosis at any of its many transitional stages of development.

All re-infection forms of tuberculosis resemble one another in several important respects, regardless of whether they arise from endogenous or exogenous sources. As a group, they are responsible for practically all of the illness, disability, extensive tissue necrosis, and mortality caused by tuberculosis in general. Futhermore, the onset of each re-infection form of tuberculosis consistently post-dates the antecedent presence of the first infection variety of the disease.

An escape of virulent tubercle bacilli from a pre-existing lesion, followed by the focalization of these migrating organisms in sensitized tissues located at nearby or remote regions is the train of events that results in the production of secondary tuberculosis, through endogenous channels. The per cent of endogenous re-infections that owe their origin to bacilli derived from lesions representative of the first in-fection type of tuberculosis is unknown. The opinion is ventured, however, that component units of the primary pathology are parent by metastasis to most examples of bone and joint, visceral and serous membrane tuberculosis seen in man as well as for many cases of phthisis. In accordance with this view combined with the suggestions presented in preceding paragraphs to the effect that a first in-fection with tubercle bacilli introduces abnormal immunologic changes which create a susceptibility to phthisis and make re-infection lesions peculiarly destructive, the initial entry of organisms into the body is credited with responsibility for practically all of the ravages the human race suffers from contaminations with the mycobacterium tuberculosis.

Certain observations made at the Lymanhurst Health Center and published elsewhere[5] provide the basis upon which the claim is made that an initial infection with tubercle bacilli creates a susceptibility to phthisis. During the past thirteen years, we have observed and traced 183 children who had experienced infections capable in each instance of producing demonstrable pulmonary infiltrations. As the result of repeated examinations, the lesions were identified as tuberculosis of the first infection type in 131 instances and as phthisis in the remaining 52 cases. A fatal tuberculous meningitis complicated the primary disease in one patient. The lesions in the remaining 130 children with this form of tuberculosis resolved eventually to leave several examples each of roentgenographically negative lungs, calcified mediastinal glands, fibrotic scars or Ghon tubercles. Since not one of these pneumonic lesions producing first infections resulted in phthisis no evidence is disclosed that susceptibility to this form of pulmonary tuberculosis exists in normal lung tissues at the time an initial infection occurs in dosage sufficient to produce a pneumonic infiltration.

In the 52 patients who, on admission to the clinic, had positive Mantoux reactions and no x-ray evidence of phthisis, this re-infection form of the disease developed during the period of the follow-up study. These 52 new lesions known in each instance to be the result of super or re-infections and not the immediate product of first infections manifested characteristics deemed typical of phthisis in tending to persist, to spread, to cavitate and to cause illness. Thirteen of these patients have died of tuberculosis and several additional cases now have far advanced pulmonary disease. These observations show that tuberculin-sensitive but otherwise healthy children are susceptible to phthisis. Not one of these 52 re-infection lesions resolved in the manner exhibited by over 99 per cent of the 131 observed first infection infiltrations. In important respects, therefore, primary and re-infection lesions display diametrically opposite tendencies.

Statistical analyses of these data involving the computation of Chi-square reveals the existence of no chances per million for accidental sampling to explain the observation that infections capable in all instances of producing pulmonary infiltrations consistently result in a relatively benign first infection type of pulmonary tuberculosis but fail to cause phthisis when they are primary in nature, whereas, lesion producing super or re-infections consistently result in phthisis, a relatively serious condition. This observation is interpreted as significant evidence that a susceptibility to the

re-infection or adult type of pulmonary tuberculosis resides solely in patients who have survived the immediate risks which attend an initial infection. Also the absence of a susceptibility to phthisis in normal tissues probably explains the extreme rarity with which consumption is seen during the first decade of life despite the vast number of first infections laid down in this period. This observation supports the thesis that tuberculin-sensitive patients are susceptible to phthisis, whereas non-allergic individuals are not susceptible to this form of the disease.

Significance of Tuberculin Reactions

In accordance with the concept of the effects of a primary tuberculous infection presented here for consideration, a positive tuberculin reaction not only establishes a diagnosis of the first infection form of the disease, but it also identifies the individual whose pulmonary tissues possess a susceptibility to phthisis and whose body harbors foci which can give rise later to a variety of serious endogenous re-infections. In these respects a positive cutaneous response to tuberculin has a uniform significance regardless of whether the reaction occurs in an infant or in an aged adult.

The test contributes no information concerning the length of time primary tuberculosis has been present unless the reaction is found to be positive either in a young child or in an older individual known until recently not to be sensitive to tuberculin. Furthermore, the Mantoux test gives no clue relative to the extent of the primary disease or to what stage of development it has progressed. And finally, a positive reaction neither indicates nor excludes the presence of tuberculosis of the re-infection type. At all ages in life, a positive cutaneous response to tuberculin provides dependable proof that the patient concerned has primary tuberculosis and that his tissues possess complex abnormal and harmful immunologic properties, such as initial contaminations with tubercle bacilli produce.

A negative reaction to tuberculin in a patient who is not acutely ill stands as reliable evidence that no tuberculosis is present and the accuracy with which properly applied Mantoux tests exclude the disease approaches 98% of perfection.

Treatment of Tuberculosis

The first infection type of tuberculosis requires no special therapy. If contact with the source of the infection is broken, the native defensive mechanism present in normal tissues from the time of early infancy brings heavy as well as light first infections under satisfactory control without necessity arising, as a rule, for resorting to active therapy. During the period acute manifestations and fever are present, bed rest is recommended. Otherwise the patient may enjoy the ordinary activities of life avoiding excesses despite the continued presence of a pneumonic infiltration in the lungs. The general regimen to adopt need not differ essentially from that recommended for the promotion of optimum health in normal children. Since no special therapy has been discovered to date which modifies the course of the disease, institutions such as preventoria, open window schools and summer camps are not of assistance in the treatment of patients with primary tuberculosis except in the occasional instance where contact with an open case of tuberculosis cannot be broken. In such cases, resort to the use of tuberculosis-free foster homes is preferable to institutionalization, particularly if the patient is an infant or a young child.

The value of special therapeutic measures is limited to their application in the treatment of re-infection forms of the disease. In general, these methods are designed to provide rest to the part involved. Various types of pulmonary collapse therapy, however, have the additional effect of rendering the sputum free of tubercle bacilli, whereby these procedures are of great importance in preventing the infection of associates.

A Practical Plan for Preventing Tuberculosis

A simple, effective, and relatively inexpensive method is available by which physicians can rapidly eradicate tuberculosis. One method is as follows. When children are brought to the office Mantoux tests should be applied routinely, not only to the patient but also to his brothers, sisters, parents, grand parents and other adult associates, and in forty-eight hours the uninfected and infected members of the family group have been identified. If, as frequently happens, all of the tests are negative, that home is known to be tuberculosis free, and nothing further need be done as long as this situation prevails, except to reapply the tests annually.

When the children of tuberculin-sensitive parents are found to have negative tuberculin reactions, the physician can be reasonably certain that no communicable form of tuberculosis exists in that family. This certainly is materially increased if only one parent gives a positive Mantoux response. Under either of these two circumstances, an ideal program requires x-ray studies of the adult reactors before families of this type can be definitely identified as harbor-

ing no spreader of tuberculosis. Where limited finances demand economy, the physician can still render valuable services by merely retesting the negative reactors at regular intervals and defer insistence upon roentgenologic studies so long as no new primary infections occur in the family concerned. If possible, however, fluoroscopic examinations should be made of the infected members of the group.

When positive tuberculin reactions are discovered in a child, x-ray plates of the chest should be taken not only of the child but also of each adult positive reactor in the family; and if no pulmonary tuberculosis of the re-infection or adult type is disclosed, the group can be considered as a safe unit. As an additional safeguard subsequent roentgenologic studies should be recommended annually in such instances, together with yearly applications of tuberculin tests to the remaining non-allergic individuals in the group. In case phthisis is disclosed in any member of the family, proper measures must be instituted either to render the consumptive's sputum negative or to eliminate the menace from the home.

In this plan of tuberculosis control, the tuberculin test accomplishes economies by identifying individuals who do not need x-ray studies, and the results of the tests applied to children serve as an index of the degree to which roentgen studies tuberculin-sensitive adult relatives or associates are imperative. An ideal plan demands routine tuberculin testing of the entire family followed by annual x-ray studies of all allergic members of the group. In the absence of finances sufficient to carry out a complete program, a modified less expensive method may be used with benefit.

In conclusion, physicians are urged to apply tuberculin tests routinely to all patients regardless of what complaints bring them to the office and irrespective of whether they are young or old, and to rely upon the results of the tests for determining the necessity of roentgen studies. Occasionally, physicial findings and sputum examinations obviate the necessity of x-ray studies in so far as diagnosis is concerned, but if detection of phthisis in its minimal stage is to be accomplished with a minimum of error, resort must be made to x-ray examinations of all infected tuberculin sensitive patients.

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INDICATIONS FOR A RADICAL MASTOID OPERATION AND THE TECHNIQUE OF THE SAME*

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IN PRESENTING this paper on the indications for the radical mastoid operation and the technique of the same, I fully realize the uncertainty which has prevailed down through the years as to the advisability or inadvisability of this operation.

You remember, as well as I do, years ago when it was considered that an ear, while it continued to discharge, was of no concern. I can recall our family physician remarking that it was better to have it discharge than to dry up.

Kuster was the first exponent of the radical treatment of middle ear suppuration when he said that "such treatment should be based on the surgical principle that a diseased bony cavity should be opened extensively, all diseased tissue removed and the source of the suppuration brought clearly to light. Only when this is done are the surgical requirements fulfilled." He proposed chiselling away the posterior wall of the meatus and converting the mastoid antrum and the middle ear into one cavity. This was, I believe, the first suggestion of the radical mastoid operation.

Schwartze was the first to do what compares to the operation we do for acute mastoiditis, but he did the same operation for both acute and chronic cases. The chronic cases did not respond to this procedure and Stacke then devised an operation to cure chronic cases. This is, with some modifications, the operation which we do today.

The radical mastoidectomy was disappointing at first because of the numerous accidents to the facial nerve and the preventable intracranial complications which followed. With the improvement in technique we consider poor results today due to inexperience or carelessness.

It is quite agreed among otologists that a chronic ear which is a menace to the health or life of a patient requires a radical operation. To determine when such an ear has become of imminent danger to the patient is our problem.

The most clear and logical classification of chronic ears, in my opinion, is the one published by Dr. Lillie's department at Rochester some two years ago. These chronic ear infections were divided into four groups.

In the first group we have those cases of

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"tuborrhea" where the seat of the trouble is essentially in the Eustachian tube. With every head cold there may be a recurrence of the discharge through a perforation located in the antero-inferior quadrant of the drum. The middle ear has escaped serious pathology and the treatment should be directed to the middle ear and also to the naso-pharynx where these infections have their inception.

Group two has to do with those cases where the perforation is clean cut and usually centrally located. The discharge is mostly mucoid and the middle ear is lined with mucous membrane to which may be attached granulation tissue or polyps. There is no evidence of epithelium extending through the perforation to the middle ear cavity and no bare bone can be detected with a probe. The hearing is very little affected. Like the first group, with every acute cold the discharge may recur, but in the interval the ear is dry and gives no symptoms. This type of an ear, as far as can be predicted, needs no surgical interference and is amenable to treatment.

The third group embraces those cases in which there is evidence of disease in the attic. The perforation is usually in Shrapnell's membrane or along the posterior margin of the drum. Through a perforation so located the epithelium is prone to extend to the middle ear and mastoid. To my mind these cases are the doubtful ones and, as such, test our judgment and experience. Although innocent for years they often and rather suddenly develop symptoms which denote trouble.

A carefully taken history which reveals scarlet fever or measles as the original infection is often indicative of serious involvement from the start. The location of granulation tissue or polypi is important. Attached to the mucous membrane, they can be ignored, but, arising from bone, they generally mean necrosis.

The triumvirate of pain, temperature, and tenderness occurring in a diseased ear generally means operation. Temperature is significant of either acute infection, local or intercurrent, or intracranial extension. The presence of pain points to dural or cerebral involvement.

The x-ray is of value only in so far as the findings are positive. A cholesteatoma of any size or the presence of a residual abscess in an otherwise sclerotic mastoid is often demonstrable by roentgen plates. However, the sclerotic mastoids which are either developmental or hangovers from the infections of childhood gives us no definite x-ray information. In those cases we must be guided by our clinical findings.

Our decision to operate in a case that falls in this doubtful class must depend on a careful examination and study of the ear. In some of these cases a modified radical operation may be tried. With this type of operation, I have had no experience. It has been my custom in a doubtful case, where conditions did not justify the radical procedure, to do a complete simple mastoidectomy, cleaning out the attic as thoroughly as possible and to await the result. If the outcome proves disappointing, I then do a radical operation.

But where there is definite evidence of bone necrosis, a marginal perforation, and a cholesteatoma is present, I am inclined to the view that the classical radical operation should be performed.

In group four are placed those cases which have definite evidence of cholesteatoma or give symptoms of extension of the process to the labyrinth or intracranial structures. The treatment of this group is surgical and time should not be lost in trying conservative measures.

A cholesteatoma, without a doubt, is practically an absolute indication for a radical operation because by erosion it can and often does cause intralabyrinthine or intracranial complications.

A facial paralysis in the presence of a chronically discharging ear demands immediate operation, provided there is no other explanation for the Bell's palsy. The presence of a high temperature not explained from other sources, headache, nausea, vomiting, and nystagmus occurring as a result of an old chronic ear demands immediate operation.

Spinal fluid study revealing no bacteria on smear or culture is a good sign.

Evidence of involvement of the labyrinth is an indication for a radical operation but not always a reason for opening the labyrinth. According to Friesner, labyrinthitis associated with chronic suppuration of the middle ear, either during the course of the disease or following a radical mastoid operation, is decidedly more innocuous than either traumatic labyrinthitis or that complicating an acute process in the ear or mastoid. But, if at any time evidence of an extension to the meninges supervenes, a labyrinthectomy should be performed.

Therefore a radical mastoidectomy is indicated only in the dangerous types of chronic suppuration of the middle ear and mastoid.

Technique

The incision I make is one taught me years ago by Dr. I. Friesner and Dr. John D. Rich-

ards. It starts at the center of the mastoid tip and is carried upward and backward to about an inch behind the auditory canal and from here beveled in the hair line to a point just above the attachment of the auricle. It should be made through the periosteum to the bone as far as the level of the temporal muscle and from here only the skin and underlying tissue should be separated from the temporal fascia.

The cortex is then exposed by carefully separating the periosteum, and the membranous canal is separated gently from the bony canal. A piece of bandage one inch wide is inserted through the membranous canal and brought out through the wound. This is used as a retractor to pull the external ear and membranous canal forward. The purpose of an incision far back and in the hair line is twofold. It gives a better cosmetic result and the closure of the wound can be made over solid bone.

The cortex is removed with a gouge just below the temporal ridge and just behind the posterior wall of the auditory canal which should be taken down at the same time. Difficulty in finding the antrum is sometimes encountered in a very sclerotic bone due to a low hanging dura or a far forward sinus. In such cases it is expedient to uncover the dura of the middle fossa and follow the inner plate forward into the antrum. Having succeeded in locating the antrum we should remove all diseased bone encountered in the direction of the zygoma, in the angle between the middle and posterior fossa, and also in the direction toward the tip. The remaining portion of the posterior canal wall can now be removed. The outer part of the wall, if not already removed in gaining entrance to the antrum, can be taken down with a rongeur to the bridge which separates the aditus from the middle ear. The bridge can be thinned down with a small Spratt curet used from within outward and then broken through with a small Spratt curet placed in the aditus, being careful not to let the back of the curet press on the inner wall of the middle ear.

Before doing any work in the middle ear outside of removing granulation tissue and remnants of ossicles with a bayonet forcep, attention should be directed to removal of the external attic wall and also the bone at the root of the zygoma. In so doing it is possible to visualize the horizontal portion of the facial nerve and the region of the oval window. As you know the facial nerve travels the upper and inner part of the internal wall of the middle ear, entering just above and posterior to the entrance of the Eustachian tube and just above the tensor tympanum muscle. It runs backward and outward, passing between the external semicircular canal and the oval window and then turns at right angles to form the vertical portion which travels in the posterior wall of the bony canal to the stylomastoid foramen. No work should be done in the middle ear until the horizontal portion of the facial nerve can be kept under vision.

The outer attic wall should be removed with a curet and rongeur down to the plate forming the floor of the middle fossa. The bone at the root of the zygoma should be removed with a Richards curet until there is no overhang. There is no doubt that thoroughness in removing the outer attic wall and leveling off the anterior wall of the auditory canal is rewarded with better surgical results.

With the region of the facial nerve and oval window under observation the facial ridge can now be lowered with a Richards curet. It can be reduced to a plane about level with the horizontal semicircular canal which is our landmark denoting the depth of safety. The anaesthetists watching the face for twitching of the muscles of the face I cannot believe of much help. When the face twitches the nerve is probably gone. The ridge should be removed as low as possible to obtain one continuous cavity between the middle ear and mastoid.

The Eustachian tube should now be curetted with Yankauers curets using the different sizes until all granulation tissue and mucous membrane has been removed. The outer tip of the Eustachian orifice can be removed with a small Spratt curet. Internal and below the Eustachian tube is the internal carotid artery, and care should be exercised here to avoid injury to this artery. Just above the Eustachian tube is a canal for the tensor tympani muscle. Removal of this muscle and the floor of its canal renders healing at this point more favorable. The annulus tympanicus should now be removed with a Spratt curet and we should then clean out the pocket formed by the facial ridge which overhangs the space behind the round window. In this area the facial nerve has departed somewhat from the middle ear and with utter safety this ridge can be gradually reemed out with a Richards curet. The floor of the external canal must then be lowered to obliterate the hypo-tympanum. Having completed this step we should observe the cavity. All sharp angles and pockets should be removed. It must be remembered that successful radical surgery depends upon attention to details, especially as they pertain to the middle ear.

Before closing the wound with interrupted

dermal sutures the membranous external auditory canal must be enlarged to facilitate post-operative care and dressings. This procedure is known as making the flap. There are many different types of flaps, but the one we always use is a modification of the Panse operation. A simple circular incision is made, starting at the bottom of the membranous canal and extending backward and upward in the concha, and then forward to the roof. At right angles to this circular incision one is made to divide the flap into an upper and lower portion to be placed against the floor. Before placing the flaps in position the skin is dissected free and the conchal and meatal cartilage so exposed is excised. When these flaps are secured in position by gentle packing they serve as a nucleus for epithelialization of the bony cavity. The postauricular wound is completely closed, and the radical cavity is carefully, but not tightly packed, with one inch iodoform gauze which is undisturbed for one week, and then little by little it is withdrawn. When in the course of four or five days the original packing has been completely removed, the cavity is dried out every other day and boric acid powder introduced into the cavity, preferably on a spatula and not by a powder blower. Years ago it was thought necessary to pack tightly these cavities every day or every other day in an effort to keep down granulation tissue to the thinnest possible layer to facilitate epithelialization. Instead of retarding granulation tissue this type of dressing unquestionably stimulated its growth.

The use of skin grafts at the time of the original operation is not advocated. The graft takes better if time has been allowed for a thin layer of granulation tissue to cover the bone. This usally takes place within ten days. Whether they are ever necessary is a debatable question. In a properly prepared radical cavity where the Eustachian tube has been obliterated, the cavity becomes dermatized almost without exception. Skin grafting will often shorten the period of healing, but it seems too much to expect a graft to close permanently an Eustachian tube which has not been obliterated.

If skin grafting is deemed advisable the paraffin basket method of Mosher is most satisfactory. In brief, it is a mould of the radical cavity made with gauze and paraffin, and this mould covered with the graft is placed in the cavity through the mastoid wound, which is then closed. The mould is left in place for six or seven days, and can then be removed through the meatus by collapsing the sides of the basket.

As to the time necessary for complete healing, no definite statement can be made. I have seen favorable cases completely healed in five weeks, and in others it has required many weeks of diligent and constant care.

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TUBERCULOSIS OF THE KNEE*

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THE knee joint, being a very vulnerable structure, is frequently involved in hematogenous implantations of tubercle bacilli; whether or not trauma plays any part in such implantations is a matter for conjecture, for although clinical evidence seems to support the theory of a focus of lowered resistance due to trauma, experimental attempts to produce tuberculous lesions in traumatized joints give variable results. One fact, however, is certain: Bone tuberculosis is always a secondary manifestation of the disease.

Considering bones and joints in the order of frequency with which they are involved in tuberculosis, the spine is most often affected (48 per cent); the hip second (36 per cent), and the knee third; the latter comprising about 14 per cent of several large series of orthopedic tuberculous cases reviewed. In our experience, 15 per cent of tuberculous joints coming under treatment have been knees, representing approximately one per cent of the patients admitted to the sanatorium.

It is my purpose to review more or less statistically, 45 cases of knee joint tuberculosis treated at Glen Lake Sanatorium between 1916 and 1934,

*A résumé of 45 cases, with discussion of tuberculous synovitis.

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and to add a few remarks relative to the clinical phases of the tuberculous knee.

The 45 patients comprising this series ranged in age from six months to 81 years (averaging 28.8 years), the majority being from 18 to 45. Sexes were about equally represented, the males slightly exceeding females. Twenty-two patients had involvement of the right knee, twenty-one of the left, and two showed lesions in both knees. Only nine (18 per cent) of the entire series were free from demonstrable clinical tuberculosis in other organs. Fifty-five per cent had clinical pulmonary and other tuberculosis, while 27 per cent showed clinical tuberculosis in other bones, genito-urinary tract, etc., without demonstrable pulmonary lesions. This brings out again the fact that the so-called surgical tuberculous lesions, be they orthopedic, genito-urinary, or what not, can not be considered as isolated entities either from the diagnostic or therapeutic standpoint. Eighty-two per cent of these people with tuberculous knees needed treatment for pulmonary tuberculosis and other surgical lesions as well as for their knees, although the disabled knees were the cause of their seeking medical aid. Too often this point is overlooked by those who have not become tuberculosis-minded and localized lesions are treated when the entire patient should be cared for.

In 78 per cent of the cases, the knee became a disabling factor (an average of 4½ years) before admission to the sanatorium, while the remaining cases became manifest in from two weeks to four years after admission to the sanatorium for treatment of pulmonary or other surgical tuberculosis. This latter statement brings out another fact, namely, that even under treatment (rest), there occur periods of bacillemia as a result of which new foci may appear.

A clinical picture of chronic synovitis is the first manifestation of tuberculosis of the knee. This is characterized by pain and tenderness, swelling, local heat and effusion. Later, as the disease progresses, abscesses and sinuses may develop (24 per cent) while various degrees of limitation of motion and fixation occur due to bone destruction and consequent muscle spasm, contracture and scar formation. Four cases had been resected prior to admission so presented only bony ankylosis and no symptoms, being hospitalized for other lesions.

From the X-ray standpoint, this series revealed some interesting findings. The 47 knees examined presented the following findings, as represented diagrammatically in Figure I:

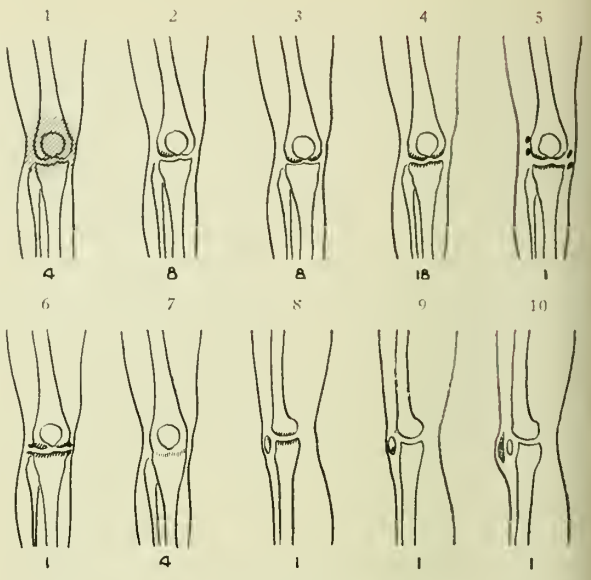


FIGURE 1
Diagrammatic representation of lesions as listed in text.

(1) 4 were of the so called synovial type, *i.e.*, they presented the clinical picture of a chronic synovitis with X-ray films showing only atrophy of the bone without evidence of bone erosion. (One infant and three adults.)

(2) 8 involvement of one femoral condyle (internal three, external five).

(3) 8 involvement of both femoral condyles.

(4) 18 involvement of both femoral condyles and tibia.

(5) 1 involvement of both femoral condyles and coexistent osteochondromatosis.

(6) 1 involvement of both femoral condyles and tibia with coexistent hypertrophic arthritis of that knee plus the other knee, wrists, ankles, hand, feet, elbows and hips.

(7) 4 showed fusion by bony ankylosis prior to admission.

(8) 1 involvement of both femoral condyles, tibia and patella.

(9) 1 showed a focus in the patella with abscess formation, but no involvement of the knee joint.

(10) 1 showed a normal knee joint roentgenologically with a tuberculous prepatellar bursitis.

Treatment of knee joint tuberculosis consists in the institution of general physical rest to which is added heliotherapy and whatever orthopedic appliance is required. When this regime brings about a subsidence of activity in the lesion, sur-

gical resection is in order, for clinical experience has shown that the best results are obtained by ankylosing weight-bearing tuberculous joints. This procedure is followed by conservative therapy plus graduated rehabilitation. Eight knees in the series under discussion were treated in this manner, the remainder by conservative measures alone. The operative procedure consists of removal of the articular surfaces of the tibia and femur, shaping the bones to fit one another either by square cutting or following the normal contour, then the evacuation of any bone abscesses, and the use of the patella as a solid bone graft (mortised into tibia and femur), or as bone chips.

Of the 45 patients treated, fourteen died of coexistent disease, and one died six hours following resection. The remaining 30 are well and able to work with exception of one; seven having been treated by surgical resection and 23 by conservative measures alone. Average hospitalization for the operated cases was 1.9 years and for the other group 2.8 years.

Of the 30 patients discharged, one is incapacitated by multiple arthritis and tuberculosis; seven have mobile joints (one prepatellar bursitis, two synovial type, four apparently healed-out bone foci), seven are ankylosed by surgical resection and fifteen by new bone formation and fibrosis.

Shortening in the affected leg varied from 2 to 3½ cm. in all, save the seven obtaining mobile joints.

The true osseous lesions reported here do not require any further remarks, the statements of incidence, symptoms and findings, types of treatment and results, speak for themselves. In my opinion, however, the so-called synovial type of knee joint tuberculosis is an open subject for discussion.

The four cases of "synovial type" included in this series will bear reviewing. One was an infant who died of tuberculous meningitis and showed a clinical picture of synovitis of the knee. Autopsy revealed tubercles in the synovia but none in the bone. (A true case—?) The second and third cases in this group of four were adults presenting the usual clinical findings with X-ray films showing only atrophy. They went on to healing with restoration of function. (Probably also true cases—?). The fourth case, an adult female, was treated conservatively for a clinical tuberculous synovitis of the knee, and discharged apparently well. However, six months after discharge her symptoms and findings recurred along with X-ray evidence of bone destruction in both femoral condyles. This knee was later resected. Here, I believe, the "synovitis" was simply the early sign of osseous tubercle of the femoral condyles.

Two of the patients sent to us with definite bone destruction in the knee, had presented the same series of events that occurred in the woman mentioned above except that synovectomy had been performed for the tuberculous synovitis and evidence of bone destruction appeared shortly after.

In this connection, it is of interest to interject a few remarks concerning three patients in the house at the present time who show a clinical picture of chronic synovitis of the knee joint. All three have X-ray films showing only atrophy of the bones of the knee. From two of them, positive guinea pigs have been obtained, but from the third, the pigs have so far been negative. These clinical pictures have been present for six months, nine months and twelve months, respectively. All three patients have pulmonary tuberculosis, and one has also a spine lesion. Are these three knees the synovial type, or are they early osseous lesions, which will later on show bone erosion on X-ray? Should they be treated by simple conservative measures, by synovectomy or by resection?

The following three brief case summaries bring out some of the facts discussed in the foregoing paragraphs:

Case 4360—White male, age 44, admitted to the sanatorium with far advanced pulmonary tuberculosis in October, 1930. For a year he was treated by bed rest, and in November, 1931, began to complain of a sore knee which he kept flexed for comfort. The leg was splinted in plaster and X-rayed from time to time. Since his prognosis from the pulmonary standpoint has remained bad, no other treatment was used. The X-ray of his knee at the present time shows a destructive process which has gone on in spite of fixation and absolute rest.

Case 4659—White female, age 30, admitted to the sanatorium in September, 1931, with a far advanced pulmonary tuberculosis, which has not responded at all well to the usual sanatorium care. In November, 1934, she complained of pain, swelling and warmth about the right knee. Examination showed an increase in temperature of the right knee, with effusion in the joint. An X-ray film showed no evidence of bone involvement. The joint was aspirated and 60 cc. of clear fluid obtained which produced tuberculosis in a guinea pig. The X-ray picture and clinical status have not changed to date (March, 1935).

Case 4370—Filipino, male, age 23, was admitted November 9, 1930, with an extensive bilateral pulmonary tuberculosis and a diffusely swollen,



FIGURE 2 FIGURE 3

FIGURE 2

X-ray of right knee, Case 4370, November 12, 1930, shows no evidence of bone involvement.

FIGURE 3

X-ray of right knee, Case 4370, February 26, 1931, shows definite areas of bone destruction in tibia and femur.

hot, tender right knee joint. X-ray of the knee on November 12, 1930, shows only a diffuse haziness of the bone, no evidence of bone involvement, while fluid from the joint showed tubercle bacilli. (Figure 2). The last films taken before death, February 26, 1931, show extensive destruction in the femoral condyles and tibia without apparent dissolution of the joint cartilage. (Figure 3.) At autopsy the entire knee joint was removed and sectioned. Several areas of bone necrosis were found as shown by X-ray, but very little change in the articular cartilage except where the subchondral granulation tissue has perforated. This can be seen on the section (Figure 4), especially under the cartilage of the lateral condyle. The synovial membrane of the entire joint is seen to be thickened and covered with tuberculous granulation tissue.

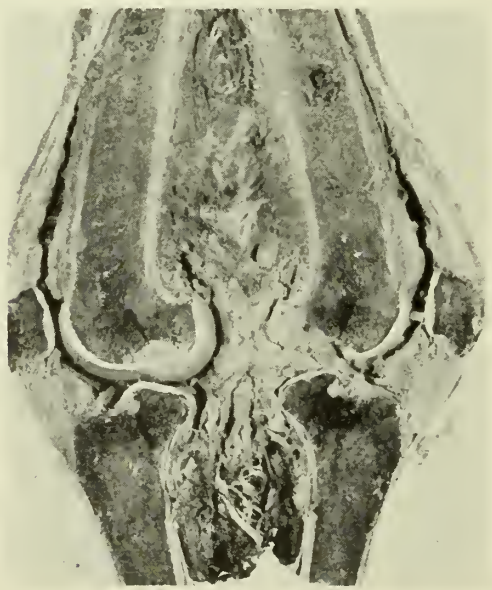


FIGURE 4

Right knee, Case 4370, autopsy specimen. Note (1) granulation tissue covering synovial membrane, (2) the layer of granulation tissue in lateral condyle of femur and the tibia, (3) necrotic bone.

I believe this last case shows quite conclusively the series of events in the development of knee joint tuberculosis, namely, chronic synovitis clinically, followed by X-ray and gross evidence of bone destruction; the synovitis being produced primarily by microscopic tubercles in the epithyseal portion of the adjacent bones.

Summary

1. Tuberculous knees represent 15 per cent of our orthopedic series and one per cent of all our tuberculous patients.

2. The early clinical picture of osseous tubercle is a chronic synovitis.

3. Surgical tuberculous lesions are multiple (82 per cent of our cases).

4. Surgical resection shortens hospitalization and offers a stable extremity.

THYROIDISM*

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Part 1

Introduction

THERE is a greater need for clinical, than there is for dead-house, knowledge of thyroidism.

On the evening of March 27, at the Hollywood Hospital Staff Meeting, during the closing discussion of this subject, our pathologist, V. L. Andrews, said, "I performed an autopsy this morning on an emaciated, 72-year-old woman. The clinical cause of *her* death was *heart failure.*"

Doctor Andrews thereupon held up the right lobe of *her* thyroid, "which," he said, "was found, for the most part, down behind her breastbone." Those in the back row could easily see the nodular mass, for it was as large as a normal kidney. This was a clear cut case of hyperthyroidism.

*Presented at University Medical Society, Madison, Wis., April 13, 1934.

1. J. A. M. A., November 12, 1932.

2. By Earnest M. Tapp, Jr., M.D., survey at the National Military Hospital, West Los Angeles, 1933.

He continued, "I also held an autopsy this afternoon on a short, stout, 52 year-old woman. The clinical cause of death in this case also was *heart failure*. Although she was water-logged, her water-content was in the cells, instead of between them. Here was a clear cut case of myxedema. This is one of her thyroid lobes. The other lobe was even smaller."

By means of a pair of tweezers he held up a bit of tissue which only those in the front row could see. The tissue appeared no more like a thyroid lobe than a peanut might resemble a lemon.

He closed with, "These two patients had no data on their hospital charts referring to their clinical states of thyroidism."

These two deaths, gentlemen, were due to cardiac failure, the one due to an over-amount, the other due to an under-amount of thyroid activity.

House of Thyroid States

Thyroidism is like a two-story house, with a cellar and attic.

The first floor resembles the normal thyroid state—the average individual. This type receives little notice from a thyroid, or any other standpoint. As long as one remains on this floor all is well.

Hypothyroidism

However, as we descend into the cellar of HYPOTHYROIDISM, too little thyroid activity is expressed. Fatigue-ability and slow metabolism are encountered, accompanied by slow thinking, slow ideas, slow nervous impulses, and slow everything. This is carried even to the floor of the cellar where, with its thick mind, thick skin, and coarse brittle hair, MYXEDEMA vegetates.

This state of marked thyroid inactivity is acquired as a result of disease, or often as a result of injudicious surgery.

To illustrate the latter: A senior student of the University of California, the daughter of one of my physician friends, the other evening asked her father, "Dad, what do you suppose can be the matter with Sadie Gray? When she left school two years ago she was one of the lights of the campus, full of pep and fun, and a beautiful girl. Yesterday, at the party, we hardly knew her with her puffy face, thick skin, and coarse stringy hair. She has no pep and can't even converse."

Interrogation by her Dad brought out the fact that this girl had been operated upon, just after leaving school, for "goiter."

Below the cellar of hypothyroidism lies the CRETIN. He should not be disturbed, because although we might be able to stretch the body by medication, the mind of the idiot would be the same. There are few who are not acquainted with the harmless crete, which when disturbed with glandular feeding unto increased bodily vigor, becomes a menace to family and community.

Points to be remembered regarding myxedema: The heart failure, the apathetic psychoses, even to coma, collapse and death.

To Charles N. Hensel, of St. Paul, I owe much for teaching regarding hypothyroidism. Four years ago, at a clinic for the American College, he taught many of us for the first time that we were neglecting our practice along this line. He writes in a personal communication, "They are baffling in that they present certain symptoms that are analogous to the neurasthenics' complaints, but there is this difference, that while the neurasthenic excuses himself for not doing things, because of the complaints, and more or less hides behind them; the hypothyroid individual is annoyed at the handicap that these things he speaks of impose upon him, and tries to get ahead regardless with the resultant unavoidable fatigue."

We must not expect mental lethargy and sluggishness in all hypothyroids. Much depends upon the age at which the thyroid state appears. If it occurs after the individual's characteristics and mental pattern are set, then mentality is not altered. If hypothyroidism occurs early in life, then mental development is retarded as well as physical vigor.

A further note of warning: One cannot always rely on the first basal metabolic rate reading as truly indicative of the patient's metabolism. In many hypothyroids there is a general neuromuscular tension which causes the first determination to be higher than a true basal rate.

A recent experience with a patient who presented all the symptoms of the hypothyroid state, but was exceedingly nervous over a family conflict, found the first basal metabolic rate plus five. However, after two grains of dessicated thyroid gland daily for a week we found the second reading minus twenty! There is this difference between the neuropath and hypothyroid, the neuropaths make excuses because of their inability; the hypothyroid man goes on until he breaks.

That which is normal for one is not normal for another; and that which is subnormal for one at one time is not subnormal for the same person at another time.

Last week a 48-year-old nurse told her story without stuttering: "By one doctor I was put on six grains of thyroid extract a day, and although I lost fat, I became highly nervous and was unable

to sleep. By another doctor I was given Lugol's solution. By still another doctor I was advised to have a thyroidectomy. I have been diagnosed 'psychoneurosis,' and am now receiving 'total and permanent disability' from the United States Government for the same."

That lady, like many other folks, is suffering from:

First, an inherited constitutional weakness, especially thyroid mal-activity.

Second, the wear and tear of life, and life is rough, and from,

Third, incorrect medical practice.

The clear-cut picture of disturbed thyroid states are not so difficult. The borderliners and mixed types are difficult, and these latter far out-number the former. They blend into each other and often overlap, with no clear line of demarkation. The cretes, the extreme myxedemas and the strongly hyperthyroids are easily recognized. The others we must study very carefully.

Hyperthyroidism

As one ascends the steps from the first to the second floor we find action. Hyperthyroidism begins to show with restlessness, nervousness, fast metabolism, fast mind and fast everything. Most of us would rather be the second-story type than "sub" or just normal all of the time. This mild or intermittent hyper is the type which drives the world—and wears out in so doing—'tis much better to wear out than to rust out! The hyper-type of mankind has made history; for example, Moses, who in his impulsiveness slew an Egyptian taskmaster. David, who in his warmth for a woman had a husband killed, so that he could take her to wife and produce Solomon. Peter, who, on account of his rashness, repentiveness and faithfulness became "The rock upon whom Christ built His church." Constantine, Frederick, Caesar and Kaiser Wilhelm were not hypos. Neither are Mussolini, Roosevelt, and our own Los Angeles Aimée.

Super-Hyperthyroidism

As we ascend higher up towards and into the attic of this house of thyroidism, dire trouble is met and real suffering is found, because in this attic dwell the children of a too fast metabolism, which beats the heart to death, and produces active psychoses with coma and collapse; it is up there that we recognize an aggravation of the same symptoms which made some men famous. The THREE "T's" of TOXIC THYROIDISM are TUMOR, TREMOR and TACHYCARDIA. These asthenic psychoses are the diametrical opposite of the asthenic psychoses of myxedema.

Thyroid enlargement (goiter) has held the stage for years. Folks will still continue to think goiter whenever thyroid trouble is mentioned. There are two times in the human's life when the thyroid enlarges, namely, puberty and the climacteric (stress periods for both sexes). The female experiences two others, menstruation and pregnancy. Harold Miller, of Pittsburgh, taught us years ago that eighty per cent of parturients had physiological enlargement of their thyroid glands, and that in these complications of pregnancy were rare; also that they were not only good nursers but that they made excellent mothers.

Many surgeons point with undue pride to the neat little white line of their thyroidectomy scars. But those are not the surgeons who know that J. William White, in 1895, recommended "Thyroid extract for keloid formation scars."

Part II

Individualities

When studying patients in regard to thyroidism we must consider that triad which is always working and is never the same:

- THE TRIAD
  - Doctor
  - Disease
  - Patient
- (1) DOCTOR
  - Surgeon—"Operate"
  - Internist—"Medicate"
  - General practitioner—"Procrastinate"

The Lord, Who created no two leaves of the forest alike, has allowed a greater diversity among thyroids, which makes us pretty much what we are.

- (2) DISEASE
  - Hyper
    - Latently toxic
    - Mildly toxic
    - Severely toxic
  - Hypo
    - Passively sub
    - Moderately sub
    - Severely sub

Take care of the simple goiter today, because it may become the toxic hyperthyroidism of tomorrow.

Bimanual Palpation of the Thyroid

Feeling the thyroid gland by means of the old choking method, from in front, is not satisfactory. The method which employs both hands of the examiner is better. The choking method, that is, with one hand of the physician encircling a part of the patient's neck from in front, always produces a muscular defense.

With the bimanual method, the examiner stands behind the patient, the thumbs being placed on the back or sides of the slightly flexed neck, and with the index and second fingers the lobes of the thyroid can be located, and their anterior and lateral surfaces explored. The patient aids by swallowing, which causes the gland to slide up and down under the examiner's fingers. This simple procedure has found many a nodule which had escaped the other method.

The fluoroscope helps in showing up the substernal goiter.

(3) PATIENT
- Heredity — We are what God and our parents made us. Characteristics are born, not acquired.
- Environment — Gives us our tastes and acquisitions.
- Stimuli
  - Intrinsic — chemical and infective.
  - Extrinsic — fixed and adjustable.

Stimuli depends upon type, age, sex, and so forth. If they are "fixed" it is just too bad for all parties concerned. Nevertheless, we must consider them all adjustable, and try to adjust them.

We have failed too frequently in securing a permanent arrest of toxic thyroidism or even in temporarily breaking the chain of events by removing five-eighths of the thyroid gland, because at the same time we did not remove the psychic stimulus, for example, mother-in-law which caused the remaining thyroid tissue to hypertrophy and yield sufficient thyroxin to produce a recurrent THYROTOXICOSIS. This is often the cause for "re-operating."

Infections, for example, typhoid and influenza, produce acute thyroiditis, which in convalescence produces hypothyroidism. Focal infections (sinus, tooth and tonsil) are common causes for mal-thyroidism. Irritation from impacted teeth, especially third molars, are too frequently neglected.

Part III

We were stimulated to study some recent results of thyroidectomy by Noehren's (1) report of "Ninety per cent cured at the end of two years." "Our cures" were not nearly as high. We didn't think they would be.

The following is extracted from a survey of the records of one hundred and twenty thyroidectomies on males during a period of seven years (1926-1933).

(2) These patients had no worries concerning hospital and medical expenses, to which worries the usual patient is subjected.

Their average age was between thirty and fifty —"the stress period of life for men."

The basal metabolic rates recorded were:

Minus in 24% of the patients, and
Plus in 76% of the patients.

Of the twenty-four who had minus basal metabolic rates recorded:

The *Clinical* Diagnoses Were	The *Pathological* Diagnoses Were
"Adenomatous" in 19 cases	Colloid in 8 cases.
	Adenoma in 9 cases.
	Colloid and hyperplasia in 2 cases.
"Hyperthyroid" in 5 cases	Colloid and hyperplasia in 2 cases.
	Colloid in 2 cases.
	No diagnosis in 1 case.
"Dysthyroid" in 2 cases	Colloid in 2 cases.
"Exopthalmic" in 2 cases	Hyperplasia in 2 cases.
	Colloid in 2 cases.
"Colloid" in 2 cases	No diagnosis in 1 case.

This taught us to stop making microscopic diagnoses with our fingers, and to diagnose firm or soft nodulations; and tense or non-tense diffuseness with or without toxicity.

Results

7 were "greatly improved."
28 were "fairly improved."
9 were "doubtfully improved."
1 showed no change.
75 were lost sight of, or were too recent to evaluate.

A large number of the "greatly-improved" and "fairly-improved," although they had tried to work, were unable to carry on. Three of the "doubtful" group had pulse rates of over one hundred. Two of the "doubtful" group had diastolic blood pressures of 140, and have, since the survey, died of cerebral hemorrhages.

It is a well-known fact that there is a close relationship between mal-thyroidism and gastro-intestinal disease. In practically seventy-five per cent of the records there appeared "heart burn," "constipation," "diarrhea," "appendectomy," "gastroenterostomy" and "exploratory operation."

Focal infection was a very common entry. The survey clearly demonstrated that a more thorough clinical and laboratory study, with better surgical

and medical staff agreement concerning the desirability of an operation, was needed.

This study evidenced that we fatigue too quickly of medical management.

It is taught us again that once mal-thyroidism always mal-thyroidism, demanding the continued services of the clinician.

We know a little about thyroidism—medically.
We know a little about thyroidism—surgically.
We do not know which is greater—our sins of commission or our sins of omission.

HEAD INJURIES FROM THE NEUROLOGICAL STANDPOINT*

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NO PROBLEM of greater importance presents itself to the medical profession today than that of head injuries. The appalling number of automobile and industrial accidents makes a proper understanding of head injuries of vital importance to every physician and surgeon. A quarter of a century ago head injury was comparatively infrequent, and consequently few medical men at that time had much experience with it. With the evolution of motor vehicle traffic and industrial growth, the time is at hand when every medical man must be ready to treat accidents of this kind. The purpose of this presentation is to give, in a general way, the present-day conception of head injuries and their effect upon the human nervous system, and to outline briefly the most desirable treatment and the proper handling of the unfortunate individuals so afflicted. While the subject is too large to be covered fully in one paper of this kind, an effort will be made to touch upon the most important phases relating to both immediate and remote effects of trauma to the head.

In order to have a proper conception of what happens to the brain in an injury to the head a brief review of the anatomical structure is in order. The brain is enclosed in a bony cavity which is incapable of expansion. Surrounded by three membranes, the meninges, the brain receives additional protection from the cerebro-spinal fluid circulating in the sub-arachnoid space. This fluid serves, as one of its functions, the purpose of a buffer, a shock absorber, so to speak, when trauma is applied to the head. To some extent, therefore, the effect of trauma to the head is lessened, insofar as the brain is concerned, by the presence of the cerebro-spinal fluid. Coming off the base of the brain are the twelve pairs of cranial nerves which travel to their exits and which are distinctly vulnerable when hemorrhage or other exudates trespass upon the base of the brain in case of injury, or when the base of the skull is fractured. The circulatory system of the brain is so arranged as to receive a maximum amount of protection against external violence in spite of the fact that the structure of the brain itself is highly delicate and intricate. The entire organization of the intracranial contents is such as to withstand to a remarkable degree the effects of trauma to the head. And to this organization may be given credit for the comparatively slight damage to the brain which occurs in many cases of severe head injury.

To begin with, in discussing head injuries, it is important to divorce skull fractures and injury to the brain. To the layman skull fracture conveys the idea of very severe injury. He associates fracture of the skull with inevitable injury to the brain, and this, of course, is an error. An extensive skull fracture may occur without any injury to the brain, and likewise a serious brain injury may occur without fracture of the skull. The occurrence of either of these two does not necessarily signify the existence of the other. A comparatively light blow to the head sometimes produces serious intracranial injury without a skull fracture, and a very severe blow to the head often produces an extensive skull fracture with no injury to the brain.

Injuries to the brain resulting from trauma may be enumerated as concussion, contusion, laceration, hemorrhage, and edema. Any or all of these may be found in the individual case. Concussion may be defined as a condition which, arising as a result of trauma, is characterized by disturbance or loss of consciousness. An exact pathologic definition is not available. The old definition designating concussion as "molecular disturbance of brain cells" is of doubtful value. Symonds, of London, in the British Medical Journal of November 10, 1928, defines concussion as "a condition of sub-total cessation of cerebral function following im-

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mediately upon the injury and lasting a few moments, with subsequent complete recovery within twenty-four hours." He assumes that unconsciousness or clouding of consciousness persisting for more than twenty-four hours is evidence of structural brain injury. A more accurate definition of concussion is not at hand, and it may be said truthfully that no one knows exactly what happens in the brain when so-called concussion occurs.

Contusion means bruising of the brain and does not necessarily imply more change in structure than that found in a bruise in any other part of the body. It likewise does not necessarily imply scar formation. Laceration means tearing or cutting of the brain with destruction of brain substance, and is a definite organic and structural injury. Edema means swelling of the brain itself with resultant temporary increase in the volume of the brain and in its fluid content, including an increase in the cerebro-spinal fluid. Hemorrhage may occur in the brain, itself, or in the sub-arachnoid space around the brain depending upon the vessel affected. It may be gross hemorrhage with large clot formation, or it may be many small or minute hemorrhages scattered throughout the substance of the brain.

In any head injury the resultant effect upon the intracranial contents must depend to some extent upon the degree of trauma applied and upon its point of application to the skull. It is of great value to the clinician to obtain in his history some idea of the type of injury received by the individual. In the case of a so-called simple concussion there is loss of consciousness for a few moments after the injury with a rapid return of consciousness and no further complications. In concussion complicated by contusion of the brain there is usually prolonged unconsciousness or a period of clouding of consciousness where the individual recovers partial consciousness but remains in a twilight state for several hours or possibly several days. In concussion complicated by both contusion and laceration there is the prolonged clouding of consciousness with focal brain symptoms detected either in the physical, neurological, or mental examination. Hemorrhage into the sub-arachnoid space or into the ventricular system is indicated by bloody spinal fluid at lumbar puncture. Massive hemorrhage with extensive clot formation is shown by localizing objective symptoms found in the neurological examination. Edema of the brain probably occurs to some extent in the majority of head injuries even though it be only simple concussion. Edema manifests itself by evidences of increased intracranial pressure and can be demonstrated at spinal puncture by increase in the spinal fluid pressure measured by the manometer. The skull being a non-elastic body makes the danger of brain compression manifest in cases of extensive brain edema. Changes in the eye grounds usually do not appear for twenty-four to forty-eight hours after the injury is received which minimizes their importance as an early diagnostic sign of edema.

The severity of the head injury may be measured to some extent by the duration of the period of unconsciousness. A short period of unconsciousness ordinarily means a slight injury in the absence of other grave symptoms. A relatively long period of unconsciousness means more severe intracranial injury and should cause closer observation of the patient even without other grave symptoms. The longer the period of unconsciousness lasts, and the slower it clears up, the more guarded must be the prognosis immediately following the injury. A basal skull fracture frequently results in drainage of cerebro-spinal fluid through the ear or nose. While from a surgical standpoint this may add to the danger of infection, from a neurological standpoint it is a good thing because it permits steady and uniform decompression of the brain by escape of cerebro-spinal fluid and thereby relieves edema. In case of spinal fluid draining from one ear, no attempt should be made to swab it out because of danger of introducing infection. The patient should lie on the affected side, to promote drainage. If the fluid is draining through the nose, it should not be packed or swabbed out, and the patient should not blow his nose because of the danger of infection being forced into the cranium. Other fractures of the skull have no bearing upon the condition of the brain unless there is a depression of the fracture with impingement of bone upon the brain. In the latter event it might cause a serious neurological complication. It must be borne in mind, also, that a serious brain injury may occur without loss of consciousness and the absence of concussion does not remove the possibility of organic brain injury.

Every case of head injury deserves very close attention, particularly during the first

24 hours or longer if serious symptoms are present. Pulse, temperature, respiration, and blood pressure should be carefully watched and should be recorded at intervals of 30 minutes or one hour while unconsciousness persists or as long as any serious symptoms manifest themselves. Pallor, sweating, a rapid or thready pulse, dilated pupils, low blood pressure, and sub-normal temperature indicate shock which demands rapid and effective treatment. External heat and cardiac and respiratory stimulants are indicated in this condition. The use of intravenous glucose in a 50 per cent solution given in amounts ranging from 50 to 200 c.c. every three hours, if needed, is valuable. Increase in intracranial pressure is indicated by a slow pulse, slow respiration, and subnormal temperature. The blood pressure is usually high when the intracranial pressure is markedly increased. A pulse rate which gradually rises from low to normal is a good indication; likewise, a gradually rising temperature from subnormal to slightly above normal with a gradually dropping blood pressure from a high point to normal is a good indication. A rapid rise in pulse and temperature, with a persistently high blood pressure, is a bad indication. A temperature, rising rapidly to a 105 or 106 degrees, indicates an almost certain death.

A careful neurological examination of the unconscious patient repeated at frequent intervals is important. Search for cranial nerve injuries should be made. These manifest themselves most frequently in the pupils, in the ocular muscles, and in the facial nerve. The neurological examination is directed at all times toward comparing the reflexes on the right and left sides of the body in an effort to localize the brain lesion, if any exists. Motor paralysis can often be detected in an unconscious patient by a careful comparative neurological examination. Rigidity of the neck and a positive Kernig's sign frequently disclose hemorrhage at the base or other meningeal irritation secondary to the injury. Vomiting should be noted as it may provide a valuable diagnostic sign.

Diagnostic spinal puncture is warranted in all cases of head injury where unconsciousness persists for several hours or where clouding of conciousness persists for any length of time. The purpose of spinal puncture is both diagnostic and therapeutic. It is desirable to note the presence or absence of blood in the spinal fluid and to note any increase in its pressure. If the mercury manometer is used, a pressure from 10 to 12 is regarded as normal. If the pressure is elevated above that point drainage through the puncture needle should be made allowing the fluid to escape slowly so as not to reduce the pressure too rapidly. If a manometer is not available, a fairly accurate idea of increased pressure can be gained by watching the escape of the fluid when the stylet is first removed from the needle. The normal rate of flow is from 18 to 30 drops per minute. If the stylet is carefully and slowly withdrawn and it is seen that the spinal fluid pressure is sharply elevated, it may safely be allowed to drip slowly until enough has been removed to reduce the pressure to normal. The amount removed at any one puncture may range from one to two ounces and the punctures may be repeated every few hours if necessary. Usually once in 12 hours or once in 24 hours is sufficient, but in cases of sub-arachnoid hemorrhage it may be necessary to repeat punctures more often. Where there is a sub-arachnoid hemorrhage with a bloody spinal fluid, frequent spinal drainage has the added advantage of allowing the blood to escape from the cerebro-spinal system, thereby preventing clot and fibrin formation which makes the formations of adhesions likely, these later resulting in obstruction to the free circulation of the cerebro-spinal fluid. It has been pointed out by some observers that spinal drainage in sub-arachnoid hemorrhage is dangerous because it disturbs the intracranial pressure and often loosens the clot formed at the point of bleeding, thereby inducing fresh hemorrhage. This seems the lesser of two evils, because the removal of excess of cerebro-spinal fluid and blood with reduction of intracranial pressure and lessening of edema of the brain is of the utmost importance. Head injuries, which are minor in degree and where consciousness returns quickly and completely, do not need spinal drainage. These cases should be kept quiet in bed for several days or possibly a couple of weeks and should be closely watched, but do not need any other treatment unless adverse symptoms arise. Aside from spinal puncture, intravenous glucose, magnesium sulphate by rectum or by mouth, and restriction of fluid intake may be employed to relieve edema of the brain and reduce intracranial pressure. Spinal drainage, however, produces the most positive and satisfactory results. Re-

cently in the laboratories at Harvard Medical School the intravenous use of sucrose has been successful experimentally in dogs in reducing cerebro-spinal fluid pressure without a secondary rise.

Surgical intervention by opening the skull should not be resorted to unless there are focal or localized symptoms of hemorrhage with clot formation or unless there is a depressed fracture of the skull with a fragment of bone to be removed. Head injury resulting in unconsciousness with recovery of consciousness, and then proceeding gradually into a comatose condition means undoubtedly hemorrhage with clot formation, and this type of case deserves immediate surgical intervention. Localized symptoms in such cases will usually be found and these determine the point at which the skull should be opened. Hemorrhage and injury by contre-coup must not be forgotten for it frequently occurs. In any case where a clot on one side is suspected and not found when the skull is opened, an opening should be made on the opposite side in order not to overlook injury by contre-coup. Hemorrhage may manifest itself immediately after the injury or within a few hours or in some cases not until 24 to 48 hours after the injury was received. Slow intracranial bleeding with massive clot formation must always be looked for in every head injury whether consciousness is lost or not, and it is for this reason that close observation of the patient for the first 48 hours is of the utmost importance. Delayed hemorrhage usually manifests itself within 48 hours after the injury is received. While it is possible for a longer period to elapse before the hemorrhage manifests itself, it is rare and comparatively uncommon for this to happen. Claims are sometimes made in court that apoplexy or sub-arachnoid hemorrhage is due to head injury sustained two or three months earlier. A review of the literature shows no justifiable ground for such an assumption. Under ordinary circumstances hemorrhage of any kind following a head injury without compound or depressed skull fracture and without serious laceration of the brain will show itself in a period ranging from a few hours to a few days. Diagnosis of localized intracranial hemorrhage should be made at the earliest possible moment, especially where the patient is stuporous or semiconscious because surgical intervention offers the only chance for recovery.

Passing on to the consideration of permanent or remote effects of head injury, we enter a field where opinions are somewhat controversial, and where the problem is one of accurate diagnosis and evaluation of symptoms in each individual case. There is no absolute rule governing permanence following head injury. Recovery is largely an individual matter and pertains in great measure to the person who is injured. Considering the large number of head injuries that occur, it is surprising that more permanent effects are not demonstrated.

The chief question to decide in considering remote effects of injuries to the head is whether or not there has been organic damage to the brain or intracranial contents. At the present time opinions among competent medical men are divided as to the interpretation of symptoms with respect to this question. A great many diagnostic methods have been devised, many of which are believed to be valuable although others are not yet truly proven. The use of encephalography is regarded by some as distinctly advantageous as a diagnostic measure; others contend that its value is not yet proven because of lack of sufficent controls. Certainly, in any case where there is a reasonable doubt as to the existence of structural brain injury, air injection and encephalography is justifiable. In addition, the injection of air into the sub-arachnoid space through a lumbar puncture needle may break up adhesions and relieve symptoms in a manner which could not be otherwise accomplished. Flat x-ray of the head without air injection is of relatively no value because of the fact that absence of skull fracture does not remove the chance of brain injury. Measurements of spinal fluid pressure made with the manometer are useful from both diagnostic and therapeutic standpoints. Subjective symptoms due to increased intracranial pressure and excessive spinal fluid formation will disappear sometimes when a very little spinal fluid is removed, and at other times when several drainages are performed.

In such cases, one can intelligently interpret the result and charge the subjective symptoms to increased intracranial pressure. Where manometer measurement of spinal fluid pressure is made and found elevated and drainage does not remove subjective symptoms, one cannot properly assume that the symptoms were due to increased intracranial pressure alone. Careful and detailed neurological examinations and careful observation of the patient are probably

more important in making the diagnosis of organic brain injury or in eliminating this diagnosis than are the various special tests which have been devised up to the present time. There is no one test which is infallible, but grouped together and interpreted collectively instead of individually a more accurate diagnostic picture is obtained.

In considering the various types of organic brain injury following trauma, we must give attention to mental impairment or disorder, to epilepsy, to cranial nerve palsies, and to paralyses of different kinds. Insanity following head injury and due solely to the injury, itself, is comparatively rare. While the so-called "traumatic psychosis" does exist, it must be caused by structural injury to the brain. In addition, there must be a definite sequence of symptoms without a long interval between the time of injury and the beginning of the mental disorder. Adolph Meyer, in 1904, presented the original conception of traumatic insanity, and, peculiarly enough, his original conception has remained practically unchanged up to the present time. If we charge that insanity following injury to the head is due solely to the injury there can be no long intervening period during which the individual is normal. It is generally accepted at the present time that insanity appearing more than one year after the injury cannot be attributed in any way to the injury. And the longer after the injury that the first symptoms of insanity appear, the less likely it is that the injury is the cause. Mental derangement may follow head injury and injuries to other parts of the body, but in the absence of structural damage to the brain or in non-cranial injuries, the trauma cannot be construed as the entire cause of the insanity. It must be viewed as a contributing factor in a predisposed individual. Here, again, must be established direct continuity between the time of the injury and the onset of mental symptoms. Head trauma may supply the emotional factor which precipitates a manic-depressive psychosis or dementia praecox in a person predisposed but in whom the insanity was latent, or in remission, prior to the injury. It is recognized that head injury may play a part in the development of dementia paralytica, presumably by increasing the permeability of the cerebral vessels to the spirochete and the luetic virus, thereby causing a latent syphilis to become active and cerebrally localized. In cases of this kind a very careful study of the individual must be made before an opinion can be given as to the relationship between the injury and the insanity. It is a persistent and erroneous belief among people that insanity is often caused by a blow on the head many years before the mental spmptoms appeared, and they invariably try to connect a bump on the head with the evolution of a mental disorder. Statistics, however, prove that less than one percent of insanities in institutions are associated with trauma as a causative factor. It is common for feeblemindedness to be claimed in children who have had head injuries, but if careful investigation is made it will usually prove that, if feeblemindedness is present, it is congenital in origin.

In considering epilepsy after head injury extreme care must be used in reaching a conclusion. Very few head injuries result in epilepsy. This is especially true in the case of idiopathic type of epilepsy. Frequently, in severe head injuries, epileptiform spells occur soon after the injury, possibly within a few moments or within a few hours. This is usually due to sudden brain irritation caused by edema or hemorrhage, and disappears promptly with relief of the edema or absorption of the hemorrhage. Focal brain injury, especially if due to depressed skull fracture, results in the Jacksonian type of spell. If there is a depressed skull fracture, operative interference will relieve the attacks. In epilepsy, as in insanity, following trauma to the head, there must be established a continuity of events without a long elimination period. It is generally conceded that if spells begin later than one year after the injury, the epilepsy is not due to trauma, unless some focal brain injury can be demonstrated.

In the London Lancet, for October 27, 1928, Wagstaffe, writing on "The Incidence of Traumatic Epilepsy after Gunshot Wound of the Head," arrives at the following interesting conclusions, after analysis of 340 post-war patients who were still alive:

1. Traumatic epilepsy is nearly ten times more common in penetrating wounds of the dura than in other head injuries.

2. The site of the wound has no influence on the onset of traumatic epilepsy.

3. Traumatic epilepsy is more than twice as common in cases of penetrating wounds of the dura which show severe organic lesions, than in those which do not.

4. Traumatic epilepsy may come on at almost any time after a gunshot wound of the head. (In his series the variation was from two months to 7½ years).

5. Traumatic epilepsy appears to be much more common in those patients who show transient Jacksonian fits within a few days of the injury.

6. Traumatic epilepsy is somewhat more common where a metallic fragment has remained in the brain.

7. The mortality in those who develop traumatic epilepsy is rather higher than in other cases of gunshot wounds of the head.

In the same article, he quotes Sargent as finding 4½ per cent of epileptics in an analysis of 18,000 cases of gunshot wounds of the head.

Paralysis following head injury may be of organic or functional cause. If organic, it is the result of structural brain injury which can be demonstrated by a careful neurological examination. If functional, the same careful neurological examination will eliminate organic cause and establish the true diagnosis.

In cranial nerve injuries following head trauma, we have to deal most commonly with the first, third, sixth, seventh, and eighth nerves. Injuries to these nerves are demonstrated by loss or derangement of function in the organs supplied by the nerves. Loss of sense of smell is not uncommon in head injuries, particularly where there has been a basal skull fracture. It is usually associated with distortion of the sense of taste which is so closely related to it. It may occur on a functional basis with no organic foundation. The same is true with impairment or loss of sense of hearing. Third, sixth and seventh nerve involvements may be regarded as definitely organic, either in the brain or enroute from the base of the brain to their exit from the skull. In a general way, cranial nerve injuries which do not disappear within one year's time after injury may be regarded as permanent, although occasionally as much as eighteen months elapse with complete recovery.

Functional nervous disorders following head injury present, by far, the biggest problem to the physician who concerns himself with examination and evaluation of such cases. It is here we find an intricate mass of subjective symptoms not substantiated by objective findings. Whether those symptoms shall be attributed to the existence of organic changes in the brain due to the injury or whether they shall be regarded as an expression of the emotional reaction in the individual or whether they shall be charged to malingering is the problem to be solved. Here is a wide difference of opinion between reputable medical men. Here must be employed the keenest diagnostic ability in order that justice be done to those concerned. Headache, dizziness, weakness and premature exhaustion, especially on attempting to work, are the subjective symptoms commonly offered by the patients. Claim is made by men of unquestioned standing that this so-called post-concussion syndrome is due to the existence of organic changes in the brain, the result of many small punctate hemorrhages. These claims are based to some extent upon postmortem findings in cases of severe head injury that have died immediately or shortly afterward. They find at autopsy extensive hemorrhages and injuries to the brain and they conclude that if these occur on a large scale in severe injuries that cause death, then they must occur on a smaller scale in injured persons who live. Unfortunately, the lack of autopsies upon those who live prevents verification of this assumption, and it would appear that the conclusion is not well founded and that the inference is not well taken. There are many other equally capable men who believe that the diagnosis of organic brain injury cannot be made solely on subjective symptoms. If a careful neurological examination and careful observation of the patient and other adequate diagnostic measures fail to reveal some objective evidence of injury to the brain, it would seem that the diagnosis of organic brain injury cannot justly be made. Objective symptoms are not necessarily confined solely to the neurological examination. They may be found at psychiatric examination. It must be borne in mind that the greater percentage of injured persons are seeking compensation, and no physician should be willing to certify to the existence of organic brain changes following injury, unless he can substantiate his opinion with some objective findings.

The emotional side may be so disordered that fear and horror are aroused and prolonged long after the injury itself has ceased to have a prominent place in consciousness. We may have the normal personality replaced, at least to some extent, by abnormal intricate psychological patterns with more or less sup-

pression of normal will power and normal self-confidence. Fear and anxiety are frequently intense enough to produce actual constitutional changes in the individual. Head injury carries with it powerful suggestion of fear, and following such injury the individual frequently lives over and over again the experiences of his accident. As a result he often suffers from mal-adaptations of his ordinary life which had never before been oppresive, but which now appear to be tremendously exaggerated. This constitutes the true functional neurosis which follows injury. In persons who have an adequate and well-balanced personality, these reactions, if aroused, do not last for any great length of time. They do, however, in many cases, result in so much anxiety that a change of occupation or of occupational environment is necessary to a return of normal adjustment. Severe insomnia, loss of appetite, intense restlessness, and a depressed and morbid state of mind produce changes in the individual which are plainly visible to the physician, and which are in fact objective symptoms.

These serve as a medium through which to differentiate the true neurosis from the malingerer. Malingering is a deliberate attempt on the part of a person to pretend something which does not exist, and his success or failure in doing so depends upon his ability as an actor and upon the shrewdness of the doctor who is examining him. Malingering should be the last diagnosis made. It is, in fact, comparatively rare. It must not be confused in any sense with the true neurosis, for, in the latter case, we have a genuinely sick person. Litigation and unsettled claims inevitably prolong the functional nervous disorder. This is not always willful, but is a sub-conscious reaction of which the individual himself may be unaware. On the other hand, securing of easy money is the chief reason for malingering, and there should be no hesitation on the part of the doctor in exposing a malingerer if he can prove his diagnosis. As Wechsler so aptly puts it, "In the neurotic the symptoms are unconsciously determined; in the malingerer they are always conscious impostures."

The evolution of a true neurosis following injury to the head depends to some extent upon the interval just before the accident occurred. Knowledge that there is going to be an accident, with a moment of intense fear before it occurs, lays the foundation for subsequent emotional reactions in an individual not adequately balanced. The attitude adopted by the attending physician is also a major factor in development or prevention of subsequent emotional disorders. An expression of serious injury on the part of the physician immediately after the accident or an attitude of undue apprehension on his part many times fixes in the sub-conscious mind of the injured person the idea of subsequent disability. On the other hand, a cheerful and encouraging attitude by the physician, with deliberate minimizing of danger to the patient, is of material assistance in expediting recovery. Proper handling of these injuries and proper care on the part of the doctor to avoid suggestions of serious after effects may be distinctly beneficial in preventing later emotional disorders. Reassurance of the patient and suggestions of the right kind during convalescence have a great deal to do with speedy recovery. Head injury cases should be returned to work at the earliest possible moment. This is often difficult, for many times the proper form of light work or part time duty which is needed by the patient is not available. At the present time, and with the employment situation as it has been the past three years, employers of labor want competent healthy men, and it has been increasingly difficult to rehabilitate the injured for this reason. This fact has also offered a fertile field for malingering and for exaggeration and prolongation of subjective complaints. Few persons who have lost good jobs as a result of injury care to go back to work in a C.C.C. Camp or for P.W.A. They very naturally prefer to remain on a compensation status and be paid for their injury instead of taking up inferior types of employment. This is having a great deal to do at the present time with prolongation of subjective symptoms following injuries in industrial accidents.

Time does not permit a detailed discussion of treatment for the remote effects of head injury, but in a general way it may be stated that in the large numbers of funtional nervous disorders which are encountered, a settlement of claims for damages and an early return to duty, are of paramount importance in restoring the health of the individual. Treatment in functional disorders is largely along psychological lines, with such suggestive therapy as can be adapted to the individual case. But, by all means, settle claims for compensation

or damages at the earliest possible moment. In organic injuries the after effects must be treated according to the symptoms they present. This subject is increasingly pertinent to the physician, to the patient, to the employer of labor, and to the insurer, and it behooves every medical man who is concerned in this type of practice to give attention and study to such cases in order that the welfare of all may be served.

BOOK NOTICE

A BRITISH LEXICON

Black's Medical Dictionary, edited by J. D. COMRIE, M.D., F.R.C.P.; cloth, 12th edition, 1,000 pages, 509 textual illustrations; London: A. & C. Black, Ltd. (4, 5 & 6 Soho Square, W. I.); 1935. Price, 18s., 9d. Published in the U. S. by The Macmillan Company, New York City.

No medical dictionary comparable to *Black's Medical Dictionary* is published in the U. S. With an almost Gallic ingenuity, this famous British work breaks down abstruse medical words of esoteric derivation into the simplest terms. This procedure, in spite of the dangers of prolixity, renders it an ideal work.

The publishers, who also publish the British *Who's Who,* make no pretense of offering this dictionary to the medical profession exclusively. It is designed for the nurse, the technician, the laboratory assistant, the student, and the layman who pretends to a smattering of science. As such, it arrives very successfully at the goal to which its editors have aspired.

This edition of *Black's Medical Dictionary* has been re-edited by J. D. COMRIE, M.D., with signal results. The latest words, including those new ones synthesized from endocrinology, psychiatry, and vitamin research, are found within this volume. Derivations from the Greek are readily indicated, and there are several useful tables.

This is a complete, authoritative medical dictionary which reduces the science of definition to the simplest terms.

A GOOD SHORT OBSTETRICAL TEXT

Obstetrics for the General Practitioner, by J. P. GREENHILL, B.S., M.D., F.A.C.S., professor of gynecology in the Loyola University School of Medicine, edited by MORRIS FISHBEIN, M.D.; first edition, illustrated, 295 pages and index; New York: The National Medical Book Company, Inc.—Doubleday, Doran Company: 1935. Price, $4.00.

This little volume does not attempt to cover anything but the most essential points of obstetrics insofar as the general practitioner will have need of them. GREENHILL, it may be noted, recommends the low cervical Caesarian operation in preference to the classical operation. He also has this to say of delivery conditions: "When a woman goes into labor the best place for the delivery is a hospital; but unfortunately the majority of women are still delivered in their homes." Not all obstetricians, particularly those of the New York City area, will agree with this statement.

There is a good chapter on the use of anesthetics in deliveries, and a chapter on postpartum care. The illustrations, which for the most part were taken from JOSEPH B. DELEE'S *Principles and Practice of Obstetrics,* are very good. There is a fairly inclusive index.

COLLEGE HYGIENE

A College Textbook of Hygiene, by DEAN FRANKLIN SMILEY, M.D., and ADRIAN GORDON GOULD, M.D.; first edition, red cloth, gold stamped, 383 pages and 90 illustrations; New York: The Macmillan Company: 1934. Price, $2.00.

Written by men who have had years of experience in teaching hygiene to college students, the first edition of this book, published in 1928, was readily accepted and widely used as a valuable addition to the numerous texts which were then available in the field of hygiene. After six years of use and accepting suggestions made by several teachers who have used the book, the authors have completely revised it, adding much to its value as a textbook for college students.

In the revision, newer advances in medical knowledge and changed ideas in the teaching of hygiene have been incorporated. Practically every chapter has been given some revision. The material on tuberculosis and other communicable diseases, the endocrines, and sleep has been entirely re-written and brought up to date.

Although the authors have included in the text the newer material relating to the subjects discussed, the bibliography contains only a few references to the more recent literature.

RUTH E. BOYNTON, M.D.,
University of Minnesota

A NEW COMPARATIVE ZOOLOGY TEXT

An Introduction to Comparative Zoölogy, by F. G. SAREL WHITFIELD, F.R.E.S., F.R.M.S., and A. H. WOOD, M.A., with an introduction by Major Sir ROBERT ARCHIBALD, C.M.G., D.S.O., M.D.; first edition, 339 pages plus index and glossary, heavy green washable cloth, gold-stamped, 141 illustrations; Philadelphia: P. Blakiston's Sons & Company, Inc.: 1935. Price, $5.00.

This new work, only recently published in England, has been designed especially for medical and science students. It is therefore expected to find in it an approach to the comparative aspect of zoölogy in relation to medicine. Such an approach has been completed by WHITFIELD and WOOD, and the result is very satisfactory.

Some of the old familiar animal forms in elementary zoölogy have been omitted. Thus, we find in this text the protozoöns *amoebae, entamoebae, paramecia, etc.;* but the chordate *amphioxus* and the arthropod crayfish have been omitted in the interests of greater inclusion of what WHITFIELD and WOOD consider more important subjects.

The earthworm is well-described, and the dogfish (*Scyllium*) is considered at length. The frog is likewise included; but the rabbit will be new to most American beginners in zoölogy. The chapters on embryology and ecology are sound.

This work may be recommended, not only to the beginning medical student, but to any physician as well. It is a fine reference text for frequent freshening of the memory in the field of animal biology.

A NEW HYGIENE TEXT

Community Hygiene, by DEAN FRANKLIN SMILEY, M.D., and ADRIAN GORDON GOULD, M.D.; first edition, red cloth, gold stamped, 369 pages and 91 illustrations; New York, The Macmillan Company: 1935. Price, $2.00.

The first edition of *Community Hygiene* was published in 1929 and was written primarily as a text for college students. The purpose of the book is well stated by the authors in the preface to the original edition: An adequate acquaintance with the problems of personal health and vitality is undoubtedly of primary importance to every individual. To the college student, however, preparing to fill a position in society a little above that of the average and a position very often carrying responsibility for the life and health of not only himself and family but of many others as well, a knowledge of the sanitation of our environment and the organization of the community for public health purposes, becomes a matter of almost equal importance and frequently of considerably more interest.

Environmental factors affecting individual and community health are discussed in the second section of the book in an interesting and very practical manner. The third section is devoted to certain community health problems such as mental hygiene, sex hygiene, tuberculosis, heart disease, and cancer. The authors describe the varied community problems arising from these specific conditions and than discuss the accepted means of prevention and control.

Problems related to maternal and infant hygiene, school health, occupational diseases, et cetera, are treated adequately.

The book is an excellent text for use in classes of college students, nurses, or adult education groups. It is well-written and the information is accurate. The revision of the book has been thorough, bringing the tables as well as the subject matter up to date.

RUTH E. BOYNTON, M.D.,
University of Minnesota

A SUPERLATIVE LABORATORY DIAGNOSTIC AID

Clinical Laboratory Methods and Diagnosis, by R. B. H. GRADWOHL, M.D.; 1028 pages, 328 illustrations, and 24 color plates; Saint Louis: The C. V. Mosby Company: 1935. Price, $8.50.

This is an entirely new publication in the field of medical laboratory methods, in which the clinical aspect is kept constantly in mind. It is a complete textbook, containing information on laboratory procedures used in every phase of medicine, in addition to the accepted interpretations of the laboratory findings.

Thorough attention is given to the study of blood, urine, gastric juice, sputum, fæces, and the spinal fluid. The significance of results in these analyses is considered in detail. Concise bacteriologic methods of use to medical practitioners are described, as are those procedures used in sanitation and public health administration. An interesting part of this section is devoted to the typing of pneumonia.

There are chapters on serologic studies, basal metabolism, and new allergy with various skin tests; also methods for the preparation of allergens. There are also chapters on hæmatology, parasitology, toxicology, and the technique of doing post-mortem examinations, as well as the preparation of microscopic tissue. There is also an interesting chapter on the preparation of museum specimens. All this is comprehensively-written and described in detail.

Laboratory procedures are described so that they fall within the scope of every medical man. The text contains numerous practical pointers of value in diagnosis for the laboratory technician and the practitioner. It is well-organized and clearly-written, and can be recommended for medical practitioners and students.

The author is director of the Gradwohl Laboratories in Saint Louis, the Gradwohl School of Laboratory Technique, and the laboratories of the Saint Louis County Hospital. L. H. WINER, M.D.

CLARK & DRINKER'S NEW WORK ON INDUSTRIAL MEDICINE

Industrial Medicine, by W. IRVING CLARK, A.B., M.D., assistant professor of the practice of industrial medicine in the Harvard School of Public Health; and PHILIP DRINKER, S.B., Ch.E., associate professor of industrial hygiene in the Harvard School of Public Health; first edition, red cloth, illustrated; New York City: the National Medical Book Company—Doubleday, Doran & Company: 1935. Price, $4.00.

The major problem in industrial medicine in the United States is pneumoconiosis. No book thus far extant covered it thoroughly until Doctor CLARK and Professor DRINKER completed this new volume in January, 1935. These two men saw fit to devote three entire chapters to the problem of pneumoconiosis, with the result that their book will stand as the final authority in this constantly-enlarging field for some time to come.

The systematic arrangement of this book is admirable. The authors begin with the organization of an industrial medicine department of an industrial unit, explain both industrial surgery and industrial medicine, and continue through the various industrial diseases, ending with a good although concise chapter on the prevention of industrial diseases.

Doctor CLARK has had ample objective background for this book, since he is the medical director for The Norton Company of Worcester, Massachusetts, manufacturers of emery wheels and allied products.

This book would be invaluable to anyone contemplating industrial medicine as a career, or to anyone embarked upon such a career.

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FOUR O'CLOCK FATIGUE

It is generally conceded that the morning is most conducive to good work whether it be physical or mental. After a night of good restful sleep, it is possible to go at high speed for several hours without tiring. At noon we pause —and should relax—while we stow away a little provender to replace the fuel that has been utilized in the forenoon's activity.

After getting under way again, it is the customary experience to find an earlier tendency to slowing down of work than before. Along about 4 o'clock there is a perceptible lagging of effort. Alertness is on the wane, responses are slower and irritability manifests itself in impatience. In the hot Spanish speaking countries of the western hemisphere, a *siesta* is observed which affords recuperation through an afternoon nap. In the temperate zone of our own country, the same pioneer spirit and indomitable courage that characterized its first white settlers is still observed by a custom of continuous application without let-up unto the evening meal.

The four-o'clock coffee habit of the Scandinavians and the Englishman's afternoon tea is not being lived up to by the second generation of transplants and now there is a tendency to popularize the cocktail hour. This is a dangerous substitution. Something should be done, however, to promote a properly observed 4 o'clock pause.

A. E. H.

MEDICAL BOOKS VS. PERIODICALS

The average practising physician has come to rely much more upon current periodicals than upon standard text books. This obtains chiefly because of the kaleidoscopic press of medical beliefs and opinions, based upon research and investigation, which promptly gain access to the public through our medical periodicals. There will be those, however, who stoutly and correctly maintain that certain well edited books, if not systems, comprise the best medium with the greatest accessibility for the busy physician who wishes to correctly and judiciously interpret problems presented by his current cases. On the other hand, a very strong argument may be easily advanced for the periodicals and their articles, which sense the immediate current developments of the year; and especially since these attain the formal book of monographic literature just about late enough to announce their obsoleteness. As usually happens, a midground trend is now evident, which for a busy practitioner has the greatest advantage: I refer to such monographs in the building, as have currently appeared in two of our leading journals for internal medicine—the Annals of Internal Medicine and the Archives of Internal Medicine, the latter published by the American Medical Association.[1-2] Other periodicals, specialized and otherwise, are currently running the same sort of reviews. They are compiled by men or groups

majoring with unusual intensity upon challenging medical problems, where unusual developments and profitable means of therapy are unfolding.[3] It is a matter of no small or limited satisfaction that so many of these reviews are being given by Minnesota men. Walter Boothby's bibliography alone fills well over twenty pages! It should not only profit us to have these contributions drawn to our attention, but we should not hesitate to congratulate the men who are willing and competent to thus review and systematize what the guild and its members are publishing the world over.

E. L. T.

1. Hench, Phillip S., et al: The Present Status of the Problem of "Rheumatism"; A Review of Recent American and English Literature on "Rheumatism" and Arthritis, Annals of Internal Medicine, Vol. VIII, No. 10 and 11.

2. Sturgis, Cyrus C., et al: Blook—A Review of the Recent Literature, Archives of Internal Medicine, Vol. 55, June (1935), p. 1001.

3. See two recent brilliant reviews in the Archives of Internal Medicine upon the subject of thyroid disease and suprarenal disfunction by Drs. Boothby and Kepler respectively.

THERAPEUTIC NIHILISM OR NEGLECT

We frequently hear the term therapeutic nihilism used with the popular meaning that it indicates lack of faith in the efficacy of previously accepted remedies which seems to come to many practitioners with long experience and advancing years.

Lack of faith while doubtless one of the factors is not the only reason why prescriptions have changed in quantity and contents. It is highly commendable that physicians should seek better remedies with scientific advancement, and a dissatisfaction with the old stimulates research and makes for progress. The danger lies in the development of a universal contempt for everything that is old.

A physician may find it profitable as well as amusing to turn to the carbon copy pages of his old prescription books from decades of the past while contemplating the changes that have taken place in his own views and convictions.

It appears that he has learned to ascribe many of his cures to the magic of *vis medicatrix naturae* and consequently sends his patients away with some simple homely direction about rest and sleep. In his habit of allaying fear, he is in danger of also belittleing the complaints of his patients. People go to doctors to be treated, not to be neglected. They go to them because they have decided not to wait for natures slow and lazy cures *and they want to see some evidence of a talisman.*

A. E. H.

POLITICAL ORGANIZATION

Under the leadership of Dr. S. B. Stegeman, a physician, and Dr. R. W. Ellis, a dentist, there has been organized an Allied Professional group at Salem, S. D. All of the physicians, dentists, pharmacists, nurses, and veterinarians of McCook County are members of the organization. The objectives are frankly and definitely political. There has been formed in South Dakota an Allied Council composed of two members from each of the state organizations of the aforementioned professional groups. It is expected that under the leadership of the Allied Council similar organizations will be formed throughout the state.

This development is an expression of the trend towards political organization of economic groups and the lessening of conventional old line party ties. It is not intended, as I understand it, that the members are to cease to be Democrats or Republicans. The two-party system is too valuable to be abandoned. It does mean, however, that the members will be doctors and dentists before they are Republicans or Democrats, professional men before they are politicians. It is intended that political support of candidates will depend primarily upon the candidates views upon matters affecting professional interests, and secondarily, upon their political label.

As I understand it, it is not desired that members abandon their party identification. It is urged that they continue their party membership. It is expected, however, that they will make it plain that their interests are primarily professional and only secondarily partizan.

In South Dakota there is great need for such an organization. Its influence will be definitely and distinctly in the public interest. It goes without saying that no movement that is not in the public interest can hope for success. Educational requirements for professional people in South Dakota are low. An influx of the untrained and ignorant, excluded by adjoining states, is lowering our standards of professional service and discouraging educated, well trained and competent young professional men from locating in South Dakota.

The growth of this organization will be interesting to observe. Its effect upon future legislation cannot be otherwise than desirable. In my opinion this movement merits the wholehearted support of organized medicine.

A. S. R.

SOCIETIES

THE NORTHERN MINNESOTA MEDICAL ASSOCIATION

Monday Session

Dr. Arthur N. Collins, Duluth, was elected president of the Northern Minnesota Medical Association for 1935-36 on the opening day of the annual meeting at Duluth, August 12 and 13, 1935. Dr. Collins will succeed Dr. G. I. Badeaux, Brainerd.

New officers elected included O. F. Melby, Thief River Falls, vice-president, and Dr. O. O. Larsen, Detroit Lakes, who was re-elected secretary-treasurer.

Registration began on Monday morning, August 12, at 8:00 a. m. More than 100 physicians from the Northwest territory registered at this time, and many more were listed during the course of the day and on Tuesday.

At 9:00 a. m. on Monday, delegates and visitors at the meeting heard Dr. M. S. Henderson, Rochester, deliver a short lecture on *Fractures of the Neck of the Femur*. At 9:30 a. m., Dr. John H. Moore, Grand Forks, spoke upon *Pelvic Inflammatory Disease;* followed by Dr. L. R. Parsons, Elbow Lake, who spoke upon *X-ray Diagnosis in Kidney Conditions* at 10:00.

From 10:30 to 10:50 on Monday morning, Dr. E. N. Peterson, Eveleth, spoke upon *Fractures of the Humerus*, and he was succeeded at 11:30 by Dr. Richard M. Johnson, Minneapolis, who discussed *New Concepts of Calcium Therapy*.

From 12:00 to 1:30 p. m. the members and visitors held their luncheon. A business meeting was scheduled from 1:30 to 2:00 p. m.; and at 2:00 the members listened to Dr. A. U. Desjardins, Rochester, who addressed them on the subject of *Radiotherapy for Inflammatory and Malignant Conditions*.

Fractures of the Ankle, an address by Dr. Owen W. Parker, of Ely, was delivered at 2:30. At 3:00 Dr. J. C. McKinley, Minneapolis, professor of nervous and mental diseases in the University of Minnesota Medical School, discussed *Neuritis*.

The Management of Diabetes Mellitus in General Surgery was presented by Dr. Clarence Jacobson, of Chisholm, at 3:30 p. m. on Monday. He was followed at 4:00 p. m., by Dr. James J. Swendson, Saint Paul, who spoke briefly on the subject of *Sterility: Its Etiology and Treatment*.

"There have been many changes in our concept of the problem of sterility," said Dr. Swendson. "Formerly the wife was blamed entirely for a barren marriage. She was treated empirically, after which both the patient and the physician hoped for the best. Now we believe that the husband is of low fertility in about 30 per cent of all cases; and that both husband and wife frequently have conditions causing their childlessness."

Dr. Swendson explained that formerly, about 13 per cent of sterile couples could be made fertile with medical or surgical aid. He believes that with more careful diagnosis and more advanced methods of treatment, from one-third to one-half of sterile couplings can be made fertile, excluding those cases where absolute barriers exist.

At 4:30 p. m. on Monday, Dr. R. L. Nelson, Duluth, presented his *Report of the American Heart Association*.

The evening session on Monday began at 8:00 with the paper of Dr. Edgar T. Herrmann, Saint Paul, on *The Treatment of Pneumonia by Artificial Pneumonothorax*.

Speaking of the technic of pneumonothorax, Dr. Herrmann remarked: "This discovery, made in Germany in 1928, now is being used extensively in clinics throughout the world, and under proper conditions and in the proper hands, supplies a valuable addition to the therapy of lobar pneumonia."

The Treatment of Acute Empyema was presented by Dr. Herbert A. Carlson, Minneapolis, at 8:30 p. m. on Monday. Dr. Gordon B. New, of the section of laryngology, oral and plastic surgery of the Mayo Clinic, Rochester, was the next speaker. His paper was entitled: *The Management of Malignant Disease of the Mouth and Adjacent Structures*.

"It is essential," Dr. New observed, "that physicians in general become familiar with the methods of treatment which should be employed in the treatment of malignant disease in various locations about the mouth, so that the patient may receive the best treatment."

The Monday session was ended by the address of Dr. Rosco G. Leland, Chicago, director of the bureau of medical economics of the American Medical Association. Dr. Leland spoke from 9:30 to 10:00 p. m.

Tuesday Session

At 9:00 a. m. on Tuesday, the members and visitors boarded the *S. S. Noronic* for a cruise

on the waters of Lake Superior up the North Shore. A five-course dinner was served on board, and the steamship docked at Duluth on the return at 2:00 p. m.

The Tuesday session was conducted on the *Noronic*, speakers being Dr. Preston Bradley, pastor of the People's Church, Chicago, and president of the National Isaak Walton League; Dr. W. R. Bagley, Duluth, president of the St. Louis County Medical Society; Dr. G. I. Badeaux, Brainerd, retiring president of the Northern Minnesota Medical Association; Dr. W. A. Coventry, president of the Minnesota State Medical Association; Dr. Thomas J. O'Leary, Superior, Wisconsin, president of the Wisconsin State Medical Society, and Dr. R. G. Leland, Chicago.

The general chairman of this meeting was Dr. M. G. Gillespie, Duluth. He was assisted by Drs. C. N. Harris, Hibbing; H. M. Blegen, Warren; C. O. Estrem, Fergus Falls; B. J. Branton, Willmar, and O. O. Larson, Detroit Lakes.

The decision was reached to hold the 1936 meeting of the Northern Minnesota Medical Association at Fergus Falls.

PROGRAM

INTERNATIONAL ASSEMBLY OF THE INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

Detroit, Michigan

October 14, 15, 16, 17 and 18, 1935

MONDAY, OCTOBER 14th

8:00 A.M.

Diagnostic Clinic: "Anemia," Dr. Cyrus C. Sturgis, Professor of Internal Medicine, University of Michigan Medical School, Ann Arbor, Mich.

Diagnostic Clinic: "Peptic Ulcer," Dr. Donald C. Balfour, Professor of Surgery, University of Minnesota Graduate School of Medicine, Rochester, Minn.

Diagnostic Clinic: "Types of Oedema and Their Treatment," Dr. Henry A. Christian, Hersey Professor of the Theory and Practice of Physics, Harvard University Medical School, Boston.

Intermission for Review of Exhibits

Diagnostic Clinic: "Factors Influencing the Healing of Fractures," Dr. William Darrach, Dean Emeritus and Professor of Clinical Surgery, Columbia University College of Physicians and Surgeons, New York.

Address: "Pneumonias of Childhood," Dr. Charles H. Smith, Professor of Pediatrics, University and Bellevue Hospital Medical College, New York.

Noon Intermission

Diagnostic Clinic: "Headache," Dr. Elliott C. Cutler, Moseley Professor of Surgery, Harvard University Medical School, Boston.

Address: "Plastic Operations on the Lower Urinary Tract for Congenital Deformities," Dr. Hugh H. Young, Professor of Urology, Johns Hopkins University School of Medicine, Baltimore, Md.

Address: "Lead Poisoning in Children," Dr. Harold B. Cushing, Clinical Professor of Pediatrics, McGill University Faculty of Medicine, Montreal, Canada.

Intermission for Review of Exhibits

Address: "Hyperplastic Tuberculosis of the Large Bowel, Its Diagnosis, Treatment and Prognosis," Dr. Fred W. Rankin, Lexington, Kentucky.

Address: "Diagnosis and Treatment of Diseases of the Esophagus," Dr. Gabriel Tucker, Professor of Bronchoscopy and Laryngological Surgery, University of Pennsylvania.

Address: "Indications for and Advantages of Vaginal Hysterectomy," Dr. Alexander W. Blain, Professor of Surgery, Wayne University College of Medicine, Detroit, Mich.

Dinner Intermission

Address: "Thoracic Surgery," Dr. George J. Heuer, Professor of Surgery, Cornell University Medical College, New York.

Address: "A Critical Estimate of the Value of Laboratory Procedures in Disorders of Metabolism," Dr. John P. Peters, John Slade Ely Professor of Medicine, Yale University School of Medicine, New Haven, Conn.

Address: "Tendon Transplantation in the Lower Extremity," Dr. Frank R. Ober, Assistant Dean, Harvard Medical School, Course for Graduates, Boston.

Address: "Hyperthyroidism in Patients over Fifty Years of Age," Dr. Charles A. Elliott, Professor of Medicine, Northwestern University Medical School, Chicago.

TUESDAY, OCTOBER 15TH

8:00 A.M.

Diagnostic Clinic: "Tuberculosis," Dr. James A. Miller, Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons, New York.

Diagnostic Clinic: "The Prostate Gland," Dr. William E. Lower, Cleveland Clinic, Cleveland, Ohio.

Diagnostic Clinic: "Chronic Arthritis," Dr. Russell L. Cecil, Professor of Clinical Medicine, Cornell University Medical College, New York.

Intermission for Review of Exhibits

Diagnostic Clinic: "Diverticulitis and Diverticulosis," Dr. John F. Erdmann, Attending Surgeon of the New York Post Graduate Hospital and Medical School, New York.

Address: "The Present Status of Bronchoscopy in Bronchial Asthma," Dr. Louis H. Clerf, Professor of Bronchoscopy and Esophagoscopy, Jefferson Medical College, Philadelphia.

Noon Intermission

Diagnostic Clinic: "Diseases of the Skin in Infancy and Childhood," Dr. Howard Fox, Professor of Dermatology and Syphilology, University Medical College, New York.

Address: "Diphtheria Prevention, Methods and Results," Dr. John G. Fitzgerald, Dean and Professor of Hygiene and Preventive Medicine, University of Toronto Faculty of Medicine, Toronto, Canada.

Address: "Empyema," Dr. Charles R. Austrian, Associate Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore.

Intermission for Review of Exhibits

Address: "Diagnosis and Treatment of Surgical Lesions of the Spinal Cord," Dr. Alfred W. Adson, Professor of Neurosurgery, University of Minnesota Graduate School of Medicine, Rochester, Minn.

Address: "The Differential Diagnosis of the Major Psychoses," Dr. Clarence B. Farrar, Professor of Psychiatry, University of Toronto Faculty of Medicine, Toronto, Canada.

Address: "Interrelationship of Mother and Fetus," Dr. Fred L. Adair, Professor of Obstetrics and Gynecology. The School of Medicine of the Division of Biological Sciences. University of Chicago, Chicago.

Dinner Intermission

7:00 P.M.

Address: "The Surgical Treatment of Granio-Cerebral Injuries," Dr. Loyal Davis, Professor of Surgery, Northwestern University Medical School, Chicago.

Address. "Conceptions of Diabetes as Modified by Recent Studies of the Hypophysis and the Adrenals," Dr. David P. Barr, Busch Professor of Medicine. Washington University School of Medicine, St. Louis, Mo.

Address: "The Water Balance of the Surgical Patient," Dr. Frederick A. Coller, Professor of Surgery, University of Michigan Medical School, Ann Arbor, Mich.

Address: "The Importance of Dietetics in Modern Medicine," Dr. Robert W. Keeton, Professor of Medicine and Head of the Department, University of Illinois College of Medicine, Chicago.

WEDNESDAY, OCTOBER 16th

8:00 A.M.

Diagnostic Clinic: "Deficiency Diseases of Children," Dr. Alan G. Brown, Associate Professor of Medicine (Pediatrics) University of Toronto Faculty of Medicine, Toronto, Canada.

Diagnostic Clinic: "Infections of the Urinary Tract," Dr. Hugh Cabot, Professor of Surgery at the Mayo Clinic, Rochester, Minn.

Diagnostic Clinic: "The Gallbladder," Dr. David Riesman, Professor of Clinical Medicine, University of Pennsylvania School of Medicine, Philadelphia.

Intermission for Review of Exhibits

Diagnostic Clinic: "Complications of Late Pregnancy," Dr. John R. Fraser, Professor of Obstetrics and Gynecology, McGill University Faculty of Medicine, Montreal, Canada.

Address: "The Present Status of our Knowledge of the Suprarenal Cortical Hormone," Dr. George A. Harrop, Associate Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore.

Noon Intermission

Diagnostic Clinic: "Benign Tumors of the Breast," Dr. Edward J. Klopp, Professor of Surgery. Jefferson Medical College, Philadelphia.

Address: "Influence of the Anesthetic on the Risk of Operation." Dr. George P. Muller, Professor of Clinical Surgery, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Address: "Fracture of the Neck of the Femur," Dr. Dallas B. Phemister, Professor of Surgery, University of Chicago, Chicago.

Intermission for Review of Exhibits

Address: "Acute Appendicitis in the Extremes of Life," Dr. Urban Maes, Professor of Surgery, Louisiana State University Medical Center, New Orleans.

Address: "Studies in Abdominal Pain," Dr. Frederick J. Kalteyer, Clinical Professor of Medicine, Jefferson Medical College, Philadelphia.

Address: "Traumatic Subdural Hematoma," Dr. William James Gardner, Cleveland Clinic, Cleveland, Ohio.

ASSEMBLY DINNER

Dr. Charles H. Mayo, Master of Ceremonies

Observance of the Twentieth Anniversary of the Interstate Postgraduate Medical Association of North America.

Address, The Honorable Herbert A. Bruce, Lieutenant Governor of Ontario, Toronto, Ontario, Canada.

Address, Rear-Admiral Cary T. Grayson, Chairman, The American Red Cross, Washington, D. C.

THURSDAY, OCTOBER 17TH

8:00 A.M.

Diagnostic Clinic: "Psychoses Associated with Organic Brain Diseases," Dr. Louis J. Karnosh, Assistant Clinical Professor of Nervous Diseases, Western Reserve University School of Medicine, Cleveland, Ohio.

Diagnostic Clinic: "Differential Diagnosis between Gastric and Duodenal Ulcer and Gall Stones," Dr. William D. Haggard, Professor of Clinical Surgery, Vanderbilt University School of Medicine, Nashville, Tenn.

Diagnostic Clinic: "Meniere's Disease," Dr. Walter E. Dandy, Adjunct Professor of Neurological Surgery, Johns Hopkins University School of Medicine, Baltimore, Md.

Intermission for Review of Exhibits

Diagnostic Clinic: "Cardiac Diseases," Dr. Harlow Brooks, Emeritus Professor of Clinical Medicine, New York University and Bellevue Hospital Medical College, New York, N. Y.

Address: "Treatment of Hyperinsulinism," Dr. E. Starr Judd, Professor of Surgery, University of Minnesota Graduate School of Medicine, Rochester, Minn.

Noon Intermission

Diagnostic Clinic: "Conditions Producing Splenomegaly," Dr. Campbell P. Howard, Professor of Medicine, McGill University Faculty of Medicine, Montreal, Canada.

Diagnostic Clinic: "Obstructive Jaundice," Dr. Waltman Walters, Associate Professor of Surgery, University of Minnesota Graduate School of Medicine, Mayo Clinic, Rochester, Minn.

Address: "Low Back Disability," Dr. Wallace S. Duncan, Cleveland, Ohio.

Address: Dr. Charles H. Mayo, President, Interstate Postgraduate Medical Association of North America, Rochester, Minn.

Intermission for Review of Exhibits

Address: "Trigeminal Neuralgia," Dr. Charles H. Frazier, John Rhea Barton Professor of Surgery, University of Pennsylvania School of Medicine and Professor of Neurologic Surgery, University of Pennsylvania Graduate School of Medicine, Philadelphia, Pa.

Address: "Bacterial Endocarditis," Dr. Ralph A. Kinsella, Professor of Internal Medicine, St Louis University School of Medicine, St. Louis, Mo.

Address: "The Treatment of Diseases of the Nasal Sinuses in Infants and Young Children," Dr. Lee W. Dean, Professor of Otolaryngology, Washington University School of Medicine, St. Louis.

Dinner Intermission

Address: "Diseases of the Thyroid Gland," Dr. James H. Means, Jackson Professor of Clinical Medicine, Harvard University Medical School, Boston.

Address: "Agranulocytosis," Dr. Russell L. Haden, Chief of the Medical Division, Cleveland Clinic, Cleveland.

Address: "A Decade's Advance in Ophthalmology," The Joseph Schneider Foundation Presentation, Dr. William H. Wilmer, Professor Emeritus of Ophthalmology, Johns Hopkins University School of Medicine, Baltimore.

Address: "Diagnosis and Treatment of Cancer of the Lip, Mouth and Throat," Dr. Arthur C. Christie, Professor of Clinical Radiology, Georgetown University Medical School, Washington, D. C.

FRIDAY, OCTOBER 18TH

8:00 A.M.

Diagnostic Clinic: "Traumatic Surgery of the Knee," Dr. John J. Moorhead, Professor of Clinical Surgery, New York Post Graduate Medical School, New York.

Diagnostic Clinic: "Diabetes," Dr. Elliott P. Joslin, Harvard University Medical School, Boston.

Diagnostic Clinic: "Malignant Tumors of the Breast." Dr. Dean D. Lewis, Professor of Surgery, Johns Hopkins University School of Medicine, Baltimore.

Intermission for Review of Exhibits

Diagnostic Clinic: "Hypertension," Dr. George Crile, Cleveland Clinic, Cleveland.

Diagnostic Clinic: "Deficiency Diseases in Adults," Dr. William Gerry Morgan, Dean and Professor of Gastro-Enterology, Georgetown University School of Medicine, Washington, D. C.

Noon Intermission

Diagnostic Clinic: "Obstructive Lesions of the Bladder," Dr. Joseph F. McCarthy, Professor of Clinical Urology, Columbia University, New York.

Address: "The Stomach's Response to the Menu," Dr. T. Wingate Todd, Henry Willson Payne Professor of Anatomy, Western Reserve University School of Medicine, Cleveland.

Address: "Further Advances in our Knowledge of the Thymus and Pineal Glands," Dr. Leonard G. Rowntree, Director, Philadelphia Institute for Medical Research, Philadelphia.

Intermission for Review of Exhibits

Address: "The Diagnosis and Treatment of Surgical Lesions of the Pancreas," Dr. Irvin Abell, Clinical Professor of Surgery, University of Louisville School of Medicine, Louisville, Ky.

Address: "The Diagnosis and Management of the Septic Appendix," Dr. W. Wayne Babcock, Professor of Surgery and Clinical Surgery, Temple University School of Medicine, Philadelphia.

Address: "Surgical Treatment of Gall Stones," Dr. Frank H. Lahey, Director of Surgery in the Lahey Clinic, Surgeon to the New England Baptist Hospital, Boston.

NEWS ITEMS

Dr. A. Spang. Buhl was recently married to Miss Marie Miller of Grand Rapids, Minn.

Pierre, S. D., is planning to build a $375,000 hospital for the use of tuberculosis patients.

Jamestown, N. D., will open its new hospital this month, with Mrs. Emma Pursley, R. N., as superintendent.

Dr. D. F. McCann, has returned from California, and will again resume general practice at Bemidji, Minn.

Dr. G. V. Sigler, who has been in practice for many years at Highmore, S. D., has moved to Marysville, Wash.

Dr. W. F. Kessler, formerly of Tyndall, has moved to Springfield, S. D., where he will continue in general practice.

Dr. Kenneth Navin, formerly of Konaway, Okla., has returned to Mitchell, S. D., and opened offices for general practice.

Dr. J. H. Hall, Glendive, Montana, is in Chicago, where he will spend several weeks in taking a post-graduate course.

Dr. John F. McKie, who has been in active practice at Wessington, for over twenty years, is now located at Sturgis, S. D.

W. E. Clark, Grand Forks, N. D., an operator of vapor baths, was recently arrested for practicing medicine without a license.

Dr. George H. Olds, a graduate of the University of Minnesota, has purchased the practice of Dr. J. L. Tavenner, at Waseca, Minn.

Dr. Roland C. Reim, St. Peter, Minn., is spending several weeks in Boston, taking a post-graduate course at the Dover Clinics.

Dr. Leda J. Stacey, who has been on the Mayo Clinic staff for many years, is now located at White Plains, N. Y., in private practice.

Dr. J. Gordon Cole, Redwood Falls, Minn., will spend several months in Europe, in surgery study at the different clinics and hospitals.

Redfield, S. D., is in hopes to secure $30,000 from the government for the erection of a county hospital in that city, as one is badly needed.

Hot Springs, S. D., has been allotted $175,000 by the government for improvements on the Battle Mountain sanitarium located in that city.

Dr. F. G. Gunlaugson has opened offices for

general practice at Heron Lake, Minn. The doctor is a University of Minnesota graduate.

Dr. Arthur N. Collins, Duluth, was elected president of the Northern Minnesota Medical Association, at the annual meeting held last month at Duluth.

Dr. Edward Anderson, who is a graduate of the University of Minnesota in June of this year, has opened offices for general practice at Lamberton, Minn.

Dr. C. N. McCloud, St. Paul, a past president of the Ramsay County Medical Society, died on August 13, from tularemia, contracted as the result of an infection from a woodtick.

Thirty-two physicians and one chemist from many cities comprise the new group of fellows who have begun training in the Mayo Foundation of the University of Minnesota.

Dr. Harold P. Lundgren, Argyle, Minn., has sailed for a years absence in Sweden, where he will do research work. Dr. Lundgren graduated this year at the University of Minnesota.

Dr. G. O. Anderson, formerly of Butte, has moved to Great Falls, Mont., and is associated with Dr. H. J. McGregor. Dr. Anderson is a graduate of the University of Minnesota.

Dr. J. W. Burns, who had been in active practice for nearly 65 years, at Oakfield, Minn., passed away on August 15th at the home of his son, Dr. J. W. Burns, Two Harbors, Minn.

Over 300 former patients of the Nopeming, Minn., sanatarium celebrated the 20th annual home-coming with a fine program arranged by Dr. A. T. Laird, superintendent of the sanatarium.

Dr. W. P. Damm, formerly of Bethel, has decided to move to Badger, Minn., and continue the practice of his profession, as this village has been without a resident physician for some years.

Dr. Neil McLean, Devils Lake, N. D., was a victim of a paralytic stroke on his way home from a Yellowstone trip, and is in a serious condition at a hospital at Corwin Springs, Mont.

Mrs. Jean Ancker, widow of the late Dr. Arthur B. Ancker, former superintendent of the St. Paul hospital which now bears his name, died in Charlottesville, Va., after a short illness.

The two weeks' period, October 6 to 20, 1935, has been selected for the seventh annual training course for medical department reservists of the United States army and navy, at the Mayo Clinic, Rochester.

The first annual meeting of the newly organized Mississippi Valley Medical Society, will hold a three days session at Quincy, Ill., on October 2-3-4. Write Dr. Harold Swanberg, Quincy, Ill., for programs and any information desired.

Dr. Harvey Petraborg, who has been with the Northern Pacific railway hospital at Glendive, Mont., for the last three years, has purchased the practice of the late Dr. R. F. McHugh, at Aitkin, Minn., and is already settled in his new offices. Dr. Petraborg is a University of Minnesota graduate.

Dr. Roderick F. McHugh, Aitkin, Minn., physician and surgeon in practice for the past 16 years, died July 24, in St. Joseph's hospital at Brainerd. A former mayor, former captian of the national guard, and an officer in the Upper Mississippi Valley Medical Association, he was also prominent in civic and fraternal activities.

Robert Clayton Lofgren, student in the University of Minnesota Medical School, spent the period from June 24 to August 1, at Square Lake, near Stillwater, as a medical assistant at the Boy Scout camp held there this year. At the University Mr. Lofgren is a member of the Alpha Kappa Kappa medical fraternity and the Chi Phi academic fraternity.

Nearly 100 physicians and their wives attended the annual meeting of the Upper Mississippi Medical Association held at Walker, Minn., last month, with a fine list of scientific paper being presented, then a boat ride on Leak Lake, culminating in a fish dinner being served. Dr. E. J. Simmons, Walker, is president and Dr. G. I. Bideaux, Brainerd, secretary of the association.

The Minnesota State Medical Association broadcasts weekly at 11:15 A. M. every Tuesday over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). William A. O'Brien, M. D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota is the speaker. The program for the month will be as follows: September 3, "Foreign Bodies in the Eye"; September 10, "Prenatal Care"; September 17, "Ticks and Disease"; September 24, "Women in Cancer Education."

Dr. William Walter Lewis, 59-year-old St. Paul eye and ear specialist, was found dead recently. The physician's body was found be-

neath the Ford bridge across the Mississippi river. Dr. Lewis, who had suffered a nervous ailment for several weeks had disappeared from his home. A native of St. Paul, Dr. Lewis was educated in St. Paul public schools and was graduated in 1901 from the University of Minnesota. He practiced in St. Paul throughout his professional career, except for two years he spent in special work in Vienna and Berlin, and during America's participation in the World war.

The role of the family physician in dealing with the problem of tuberculosis in an average American home is starred in the motion picture, "Contacts," whose revised and amplified version is now available for showing throughout Minnesota. The film, which has the distinction of being the first motion picture with sound and music ever made on a health theme, is now being requested for nation-wide use. The picture shows a physician dealing with a case of miliary tuberculosis in a child. He goes into action to trace the infection back to its source. This epidemiological effort introduces the audience to the entire family circle. Both in caring for the child during the time of illness and in protecting other members of the family and the community from further infection, he has the stellar part in the tragic little drama. The picture is in no sense, local in its application. Favorable comments which have been received by the Hennepin County Tuberculosis Association which produced the picture in co-operation with the University of Minnesota, emphasize the wide range of its audience appeal. It is of interest to children as well as adults, to lay audiences and professional groups. Its lesson is woven into the story of the play making strikingly effective the fact that a person who appears well may have tuberculosis and that protection from serious illness from tuberculosis is dependent upon regular medical examinations. The extended film includes a new sequence, "Modern Weapons for the Control of Tuberculosis," which reviews in an effective panorama such factors as the tuberculin skin test, the x-ray, the methods of resting the lung, sanatorium treatment, et cetera. Arrangements for showing the film in Hennepin County may be made through the Hennepin County Tuberculosis Association, and in other parts of the state, through the Minnesota Public Health Association.

Loose Stools in Infants

require extra diapering, and inconvenience the mother

Clinically, loose stools are accompanied by a dehydration which, when excessive or long continued, interferes with the baby's normal gain. A long-continued depletion of water is serious, since "the fluid requirements of an infant are tremendous. A normal infant 15 pounds in weight will frequently excrete as much as one litre of urine per day. A negative water balance for more than a very short period is incompatible with life." (Brown and Tisdall)

Moreover, when the condition is superimposed by chance infection, the delicate balance may be seriously upset, since the infant's reserves have already been drawn upon, so that resistance to infection and dangerous forms of diarrhea may be too low for safety. Every physician dreads diarrhea, which Holt and McIntosh call "the commonest ailment of infants in the summer months."

If you have a large incidence of loose stools in your pediatric practice—

TRY CHANGING TO A DEXTRI-MALTOSE FORMULA

When requesting samples of Dextri-Maltose please enclose professional card to cooperate in preventing their reaching unauthorized persons.
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The JOURNAL LANCET

Minneapolis, Minnesota
September 15, 1935

Vol. LV, No. 18
New Series

Officers
Montana State Medical Association



L. H. FLIGMAN, M.D.
President
Helena, Mont.



E. G. BALSAM, M.D.
Secretary
Billings, Mont.

LOUIS H. FLIGMAN, M.D.

Dr. Fligman was born on May 20, 1878. He attended common and high schools in Minneapolis and two years in the arts college of the University of Minnesota, from which he was graduated in medicine in 1901. For a year he was instructor in physiology in the Medical School of the University. Ill health took him to Montana in 1902, where he began practice in Helena. Two years later he went to the Universities of Vienna and Berlin, where he did post-graduate work in internal medicine. Returning to practice in Helena, he went back to Vienna and to Munich, Germany, in 1907-1908. Returning to Helena in the fall of 1908, he was the first physician in Montana to limit his practice to internal medicine, which is still his specialty. During the World War, Dr. Fligman was commissioned a Lieutenant-Commander in the medical corps of the U. S. Navy. He is a member of the Lewis & Clark Medical Society, the Montana State Medical Association, the American Medical Association, and is a Fellow of the American College of Physicians, of which body he has been Governor since 1920. He has been a member of the Montana State Board of Health since 1919, and he is the Montana director of the American Society for the Control of Cancer.

ELMER G. BALSAM, M.D.

Dr. Balsam was born in Manistee, Michigan, on June 18, 1884. He was graduated from the Medical School of the University of Michigan in 1906, and was licensed to practice in 1906. After leaving the University of Michigan in 1906, Dr. Balsam went to the Hospital of the Northern Pacific Beneficial Association at Brainerd, Minnesota, where he spent two years in medical and surgical work. He located in Billings, Montana, in July, 1908, where he formally began the practice of medicine. In 1913-1914, Dr. Balsam was honored by being elected President of the Montana Health Association, and in 1914, the following year, was elected secretary-treasurer of the Montana State Medical Association. During the World War, Dr. Balsam was the medical aide to the Governor of Montana. He was appointed to the Montana State Board of Health in 1919, and is now its President. He is a Fellow of the American Medical Association, and physicians in Montana are acquainted with him through his long tenure of service as the Secretary of the state society, and as an associate editor of THE JOURNAL-LANCET.

Fifty-seventh Annual Meeting of the Medical Association of Montana, Helena, July 2 and 3, 1935

OFFICERS 1935-36

President

L. H. Fligman, M.D.....Helena

President-elect

J. A. Evert, M.D.....Glendive

Vice-president

H. J. McGregor, M.D.....Great Falls

Secretary-treasurer

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Delegate to A. M. A.

J. H. Irwin, M.D.....Great Falls

Alternate Delegate

E. M. Gans, M.D.....Harlowton

COUNCILORS

L. G. Dunlap, M.D., 1937.....Anaconda
L. T. Sussex, M.D., 1937.....Havre
E. N. Jones, M.D., 1937.....Wolf Point
A. D. Brewer, M.D., 1936.....Bozeman
J. H. Garberson, M.D., 1936.....Miles City
E. A. Welden, M.D., 1936.....Lewistown
T. L. Hawkins, M.D., 1938.....Helena
E. D. Hitchcock, M.D., 1938.....Great Falls
McCormick Smetters, M.D., 1938.....Butte
E. S. Murphy, M.D., 1938.....Missoula

COMMITTEES 1935-36

Legislative—J. A. Donovan, M.D., 1937; J. M. Flinn, M.D., 1940; E. M. Larson, M.D., 1936; F. F. Attix, M.D., 1938; W. E. Long, M.D., 1939.

Hospital—T. R. Vye, M.D., 1938; J. A. Evert, M.D., 1936; C. C. Seerley, M.D., 1937.

Compensation—E. M. Larson, M.D.; F. L. Unmack, M.D.; H. Smith, M.D.

Public Instruction in Health—C. McGill, M.D.; J. F. S. Marshall, M.D.; F. L. Watkins, M.D.; E. S. Murphy, M.D.; H. A. Bolton, M.D.

Cancer—G. J. McHeffey, M.D.; C. H. Frederickson, M.D.; J. H. Bridenbaugh, M.D.; J. H. Garberson, M.D.; T. L. Hawkins, M.D.

University—C. E. K. Vidal, M.D.; J. R. E. Sievers, M.D.; B. L. Pampel, M.D.

History of Medicine and Biographies—E. D. Hitchcock, M.D.; T. F. Walker, M.D.; J. H. Irwin, M.D.

Orthopedic—E. M. Porter, M.D.; E. S. Porter, M.D.; L. W. Allard, M.D.; H. D. Kistler, M.D.; J. C. Shields, M.D.

Dentists, Druggists and Nurses—W. J. Marshall, M.D.; H. W. Bateman, M.D.; B. C. Shearer, M.D.

Medical Protective Insurance—J. C. MacGregor, M.D.; J. H. Hall, M.D.; L. R. Packard, M.D.

Infant Welfare—H. A. Tash, M.D.; E. A. Welden, M.D.; A. L. Gleason, M.D.; A. E. Stripp, M.D.; A. R. Varco, M.D.

Medical Publications—L. G. Dunlap, M.D.; E. D. Hitchcock, M.D.; A. Karsted, M.D.

Periodic Health Examinations—L. H. Huber, M.D.; A. T. Haas, M.D.; C. B. Rodes, M.D.

U. S. Med. Res.—W. R. Morrison, M.D.; C. F. Jump, M.D.; W. P. Smith, M.D

Medical Economics—J. C. Shields, M.D.; J. P. Ritchey, M.D.; R. B. Durin, M.D.; F. F. Attix, M.D.; P. Potter, M.D.

Veterans' Affairs—P. L. Greene, M.D.; J. G. Thompson, M.D.; R. E. Seitz, M.D.

Post-graduate Work—Secretaries of the Constituent Societies.

Program—J. H. Bridenbaugh, M.D.; J. I. Wernham, M.D., and the Secretary.
Date of next meeting July 8 and 9, 1936 in Billings.

COUNCIL MEETING

Placer Hotel, July 1, 1935, 8 P. M.

The meeting was called to order by President Vidal. Councilors present: Drs. L. G. Dunlap, A. D. Brewer, J. H. Garberson, M. Smetters. Past Presidents J. R. E. Sievers, A. Karsted, G. M. Jennings, R. C. Monahan, E. M. Gans. President-elect L. H. Fligman. Members, J. E. Arnold and W. J. Marshall. Guest, R. G. Leland, of Chicago.

A quorum being present, business was in order.

The secretary read a letter from the Montana Relief Commission cancelling the agreement for relief medical services except as it pertained to the fee schedule, beginning July 1, 1935. Explanatory remarks were made by Dr. Arnold, director of Relief Medical Work.

Dr. Leland addressed the gathering on Medical Economics.

Dr. Dunlap moved that the meeting adjourn until one o'clock Tuesday. Seconded, Dr. Brewer. Carried.

E. G. Balsam, M.D.,
Secretary.

Tuesday, July 2, the Western Branch of A.P.H.A. and the Medical Association of Montana held a joint session under the direction of President Brown of the Western Branch.

MEETING OF THE HOUSE OF DELEGATES IN PLACER HOTEL

HELENA, MONTANA

July 2, 1935

President C. E. K. Vidal, of Galen, called the meeting to order at 2:15 P. M. Credentials were presented and the following delegates answered roll call:

Cascade, Drs. I. Allred, F. L. Andrews, J. H. Irwin, J. C. MacGregor, F. L. McPhail. Eastern Montana Medical, Drs. I. J. Bridenstine, J. A. Evert, J. H. Garberson. Fergus, Dr. F. F. Attix. Gallatin, Dr. A. D. Brewer. Hill, Dr. L. T. Sussex. Lewis and Clark, Drs. J. M. Flinn, O. Klein. Mt. Powell, Drs. J. L. O'Rourke, J. J. Malee. Musselshell, Dr. M. Vornholt. Park, Dr. S. E. Leard. Silver Bow, Drs. A. Karsted, P. Potter, J. C. Shields, J. R. E. Sievers. Western Montana Medical, Drs. G. M. Jennings, J. P. Ritchey, H. Smith. Yellowstone, Drs. L. W. Allard, E. M. Farr, T. R. Vye. Councilors, Drs. A. D. Brewer, L. G. Dunlap, J. H. Garberson, M. Smetters, L. T. Sussex. Past presidents, Drs. J. H. Irwin, J. A. Donovan, R. C. Monahan, F. F. Attix, G. M. Jennings, A. Karsted, E. M. Gans, J. H. Garberson, J. R. E. Sievers, B. L. Pampel. Guests, Drs. C. T. Sweeney, Medford, Ore., president of Pacific Northwest Medical; Mewburn and Williamson, of Edmonton, Alberta. Members, Drs. W. H. Blakemore, H. Denman, L. G. Russell, T. Walker, R. H. Dyer, H. W. Gregg, J. G. McHeffey, A. L. Weisgerber, R. L. Morledge, J. R. Soltero, T. J. B. Shanley, S. V. Wilking, C. F. Coulter, H. J. McGregor, C. C. Wallin, E. M. Porter, E. R. Grigg, W. P. Smith, M. G. Danskin, G. A. Lewis, L. R. Packard, W. T. Williams, H. F. Carman. There being no contests, a quorum present, the president declared the session ready for business.

Dr. Karsted moved the minutes of the last meeting as published in the Journal-Lancet be adopted. Carried.

The president appointed the following committees: Auditing, Drs. L. G. Dunlap, A. D. Brewer, M. Smetters. Nominations for the State Board of Health, Drs. G. M. Jennings, F. L. Andrews, J. M. Flinn. Place of Meeting, Drs. T. Walker, I. J. Bridenstine, A. Karsted.

Delegate Dr. J. H. Irwin submitted a verbal report of the Atlantic City meeting of the A. M. A. and recommended that the members read the complete minutes in their Journal-Lancet. Dr. Leard moved the adoption of the report. Seconded by Dr. Sussex. Carried.

Dr. Donovan, chairman of the Legislative Committee, told of the work during the past session of the Legislature to defeat the cultists bills, explained the expense and lauded those members who devoted time and energy in the successful campaign. He stated that his committee and the State Board of Medical Examiners did not favor enacting a Basic Science Law. He preferred that the Association conduct a defense against cultists bills rather than to introduce measures against cultists and increase the labors of the legislators. Dr. Donovan moved the adoption of the report. Seconded by Dr. McPhail. Dr. Shanley hoped the Association would assume the offensive and that money would be appropriated for the Legislative Committee by the Council. Discussed by Drs. Flinn, Attix, Shields and Balsam. Carried. Dr. Potter moved that the House of Delegates recommend to the Council that money be appropriated for the Legislative Committee. Seconded by Dr. Bridenstine. Carried.

Dr. Shields gave a detailed report for the Medical Economics Committee. He read a letter from the Montana Relief Commission to Dr. J. E. Arnold, appointing him Medical Director for Relief and cancelling the agreement between the Relief Commission and this Association except for the fee schedule as of July 1, 1935. Mr. C. F. Hawkes, from the Relief Commission Auditing Department, presented the amounts paid the various doctors for Relief medical services. Dr. Leard moved the adoption of the report and that the same members of the Medical Economics Committee continue their work for another year. Seconded by Dr. Vornholt. Carried.

Dr. Dunlap presented the report for himself and Drs. T. L. Hawkins and M. Smetters, a committee of councilors appointed April 27, 1935, to study relief medical questions and make suggestions for the guidance of this session, and moved its adoption. Seconded by Dr. Allard. Carried.

Dr. Monahan praised the work done for the members of the profession by the Medical Economics Committee. Dr. Soltero said he was pleased that the Association had such a splendid committee to represent the doctors and to make the arrangements with the Relief Commission for medical services. Dr. Carman hoped that the profession would continue united so that it could control the practice of medicine in the state. Dr. Potter suggested that we have medical representation in dealing with relief matters rather than to allow politicians to dictate the policies.

Dr. Evert moved that the expenses of the Medical Economics Committee from this date be paid by the Association, if not paid by the Relief Commission. Seconded by Dr. Brewer. Carried.

After a recess of fifteen minutes the meeting continued.

The guests were introduced—Dr. Sweeney, Dr. Williamson and Dr. Mewburn.

Dr. R. G. Leland, Director of the Bureau of Medical Economics of the American Medical Association, told the doctors that no new way of practicing medicine better than the old had been discovered. As for relief medical services, no group had rendered the amount of free services comparable to that of our profession, in addition our fees had been cut very much below normal, but the high standard of services had been maintained, consequently we had the right to advise how the medical work should be done. He admonished the members to deal with the relief authorities through the Association and individually to maintain the highest ideals, remember the ethics and deliver real services. Then medicine can continue as the public will realize that its members are maintaining their high principles for the good of the people.

Dr. McPhail moved that the election be held in the General Assembly at noon Wednesday Seconded by Dr. O'Rourke. Carried.

Dr. Dunlap reported for the Auditing Committee that the books of the secretary-treasurer balance, that there is a considerable appreciation in the value of the bonds, and that the officer be commended for his skillful management of the affairs of the Association and moved the adoption of the report. Seconded by Dr. Smetters. Carried. Dr. Dunlap suggested for the protection of the secretary-treasurer that a certified public accountant be employed to check the accounts and the assets.

Dr. Flinn reported for the Committee on Nominations for the State Board of Health, Drs. E. G. Balsam, Billings; J. A. Evert, Glendive; Geo. Setzer, Malta; E. M. Farr, Billings, and J. R Soltero, Lewiston, and moved the adoption of the report. Seconded by Dr. Andrews. Carried.

The Committee on Place of Meeting asked that the General Assembly vote upon that question.

Dr. McHeffey presented the report for the Cancer Committee and moved its adoption. Seconded by Dr. Vye. Carried.

Dr. Irwin, in the absence of Dr. Hitchcock, chairman of the History Committee, told how the work was progressing.

Dr. Garberson for the Fee Schedule Committee

asked those members who wished revision of specific items to send him their suggestions.

The president read the Marriage Law and the certificate for the physician's signature as drawn by the attorney-general. This subject was discussed by Drs. Vidal, Evert, Balsam, Dunlap, Gans and Potter. As the certificate included "is free from any disease leading to congenital abnormalities in offspring," and the opinion of the members was unanimous that it was impossible to make such determination and sign such statement. Dr. Andrews moved that a committee be appointed to confer with the attorney-general regarding the law, the certificate and the minimum fee and report Wednesday. Seconded by Dr Garberson. Carried. The president appointed Drs. Allred, Farr and Klein. (As the attorney-general did not meet with the committee, a report was not made. By telephone the attorney-general told the committee that since the law contained those specific clauses, it was not within his power to change anything.)

Dr. Potter moved that it be recommended to the Council, that Dr. Shield's stenographer be given one hundred dollars for work for the Medical Economics Committee and that E. A. Kainu be given one hundred dollars for compiling the medical relief payment statistics. Seconded by Dr. Flinn. Carried.

Dr. O'Rourke presented statistics which he had collected from several states pertaining to relief organization for which the president thanked him. Dr. Leard moved the meeting adjourn. Seconded by Dr. Potter. Carried.

E. G. Balsam, M.D.,
Secretary.

GENERAL ASSEMBLY OF THE MEDICAL ASSOCIATION OF MONTANA

The meeting was called to order by the president, Dr. C. E. K. Vidal, of Galen, in the Consistory Building, Wednesday morning at 8:30.

The Address of Welcome was made by Acting Governor of Montana, Elmer Holt, of Miles City.

The Response for the Association was given by Dr. A. W. Morse, Butte, vice-president of the association.

Dr. Charles T. Sweeney, of Medford, Oregon, president of the Pacific Northwest Medical Society, was introduced and made a short talk about the value of medical organiaztion.

Drs. Mewburn and Williamson, of Edmonton, Alberta, were introduced.

Dr. E. G. Balsam, of Billings, presented his report as secretary-treasurer.

Dr. A. W. Morse presided when Dr. C. E. K. Vidal gave the president's address.

Dr. J. A. Myers, Minneapolis, Professor of Medicine, University of Minnesota, told of the Modern Aspects of the Diagnosis and Treatment of Tuberculosis. This was discussed by Drs. Terrill and Vidal.

Dr. R. G. Leland, director of the Bureau of Medical Economics, A. M. A., Chicago, presented Medical Economics.

Dr. F. E. Burch, St. Paul, Professor of Ophthalmology, University of Minnesota, described the Treatment of Detached Retinae. Discussion by Drs. Donovan and Dunlap.

ELECTION

President-elect—Dr. J. A. Evert, of Glendive, was nominated by Dr. J. A. Donovan, who moved the nominations be closed and that the secretary cast the unanimous ballot of the Association for Dr. Evert. Seconded, Dr. Dunlap. Carried.

Vice-president—Dr. H. J. McGregor, of Great Falls, was nominated by Dr. B. C. Shearer, who moved the nominations be closed and that the secretary cast the unanimous ballot of the Association for Dr. McGregor. Seconded by Dr. Gans. Carried.

Secretary-treasurer — Dr. S. A. Cooney, of Helena, was nominated by Dr. J. L. McCarthy; Dr. E. G. Balsam, of Billings, was nominated by Dr. S. E. Leard. The votes were: Dr. Balsam, 61; Dr. Cooney, 41, and Dr. Balsam was declared elected.

Delegate to the A. M. A.—Dr. J. H. Irwin, Great Falls, was nominated by Dr. A. Karsted, who moved the nominations be closed and that the secretary cast the unanimous ballot of the Association for Dr. Irwin. Seconded, Dr. Dunlap. Carried.

Alternate Delegate to A. M. A.—Dr. E. M. Gans, Harlowton, was nominated by Dr. L. W. Allard, who moved the nominations be closed and that the secretary cast the unanimous ballot of the Association for Dr. Gans. Seconded, Dr. Leard. Carried.

Councilors—Drs. T. L. Hawkins, Helena, E. D. Hitchcock, Great Falls, M. Smetters, Butte, and E. S. Murphy, of Missoula, were nominated by Dr. Andrews, who moved the nominations be closed and that the secretary cast the unanimous ballot of the Association for each as councilor for three years. Seconded, Dr. Farr. Carried.

The meeting adjourned for lunch.

The president called the meeting to order at 2 P. M.

The invitation from the Yellowstone Valley Medical Society for the 1936 annual meeting to be in Billings was accepted.

Dr. F. L. McPhail, Great Falls, presented the "Treatment of Eclampsia."

Dr. L. T. Sussex, Havre, told about "Chronic Infections in the Urinary Tract." This was discussed by Dr. A. R. Sievers.

Dr. J. R. Vasko, Great Falls, read a paper on "Low Back Pain."

Dr. H. H. James, Butte, described the "Treatment of Uterine Myoma and Myopathic Hemorrhage with Radium."

Dr. L. H. Fligman was escorted to the chair and assumed the office of president.

Dr. J. H. Bridenbaugh, of Billings, thanked the guests, Drs. Leland, Myers and Burch for their contributions to the scientific program.

Past President Vidal assured our visitors from the Canadian Medical Society and the Pacific Northwest Medical Society that it was a great pleasure to have them with us and he hoped that they would soon return for other gatherings. He told the Western Branch of the American Public Health Association this was one of the best joint sessions we had ever held and thanked the officers who had done so much to have it so happen. He thanked the Lewis and Clark Medical Society and the good people of Helena who had done so much to make our visit pleasant.

Dr. Dyer moved the meeting adjourn. Seconded by Dr. James. Carried.

E. G. Balsam, M.D.,
Secretary.

REPORT OF DELEGATE TO ATLANTIC CITY MEETING

June 10-14, 1935

This was a joint meeting of A. M. A. and Canadian Medical Association—the first in history. The scientific sessions all were conducted jointly and met apparently with hearty approval on the part of both the Canadian and United States doctors. The attendance (more than 8,000) was one of the largest. The commercial exhibits were many, complete and of outstanding merit. The scientific exhibits deserve especial praise and one could have spent the entire time there and still not have been able to study them thoroughly.

The House of Delegates was called to order Monday at 10:00 A. M. by Van Etten, vice-speaker, who explained that Speaker Warnshuis son had died, thus preventing his appearance. A standing "Moment of Silence" was held by the House in his respect. After the usual preliminaries were accomplished, the House listened to addresses by the speaker, the president, and president-elect. These speeches being published in full in the Journal A. M. A., so there is no occasion for comment thereon as they can and should be read by all.

The report of Board of Trustees is very interesting, showing as it does the great amount and variety of work being carried on by the A. M. A. headquarters for the benefit of its members and the advancement of medicine in general.

The report of the Judicial Council came next, and can also be read in full in the Journal A. M. A. Membership in state associations, improved methods of administering the principles of Medical Ethics, and co-operation between councils being the main points covered in their reports.

A number of resolutions were then introduced and referred to proper committees for report, the substance and final action being available in the Journal A. M. A.

The election of officers took place Thursday P. M., and the Northwest can be congratulated, as a man, Tate Mason, of Seattle, was elected president, and Ralph Fenton, of Portland, was elected trustee. Kansas City was almost unanimously chosen as a meeting place for next year. Complete minutes are published in June 22 and 29 Journals.

J. H. Irwin, M.D., *Delegate*,
Great Falls.

MEDICAL RELIEF IN THE U. S.

I have mailed out questionnaires to the secretary of every state association. I have received replies from thirty-three states. Out of the thirty-three states replying, five had no contracts or agreements with their respective Relief Associations. The reasons for not having contracts were attributed to various causes, varying from an inability of either the State Medical Association or the Relief Organization to agree to conditions contained in these agreements. Also several states maintained their own medical relief organization. Three of the states that failed to reach an understanding were left without any agreement whatsoever.

Satisfaction on the part of the Medical Association with the agreements formulated showed 78 per cent of the states satisfied and 22 per cent dissatisfied.

State committees (medical) were appointed in practically all of the participating states. In all but one, their activities were confined to acting in an advisory capacity to the State Medical Society and the State Welfare Organization. The county committees were active in all states. The acceptance or rejection of medical requisitions was left entirely to them. Most all states had an active medical director. This director acted on cases of dispute coming from the local county committees.

The majority of states reported that changes had been made in their agreements during the past year. Some to the detriment of the medical organization and some for the betterment.

Now as for fees: Major surgery was not permitted under the agreement in two states, Utah and Rhode Island. The average price for major surgery in other remaining states was $53.00. The maximum price allowed was $100.00 in the state of Wyoming, and a minimum price of $25.00 was allowed in the states of Mississippi and Alabama; $50.00 was the price allowed in a large percentage of the states.

In obstetrics for normal cases the average price allowed was $20.00; $12.50 was the minimum allowance in the states of Texas and Indiana. The maximum price allowed for these cases was $30.00 in the state of Wyoming. Quite a few states permitted an additional allowance for abnormal cases.

For house calls the average fee permitted was $1.67. Maximum fee was $2.25 in Wyoming. Minimum fee was $1.00 in Texas and Indiana.

Office calls averaged $1.00. Minimum fee of 50 cents in Texas, and $1.50 maximum in Wyoming.

The majority of states reported their agreements based on a 50 per cent reduction of minimum fee schedule. There were exceptions to this, however; North Dakota granted a 33⅓ per cent reduction; Colorado, 30 per cent; Wyoming, 25 per cent; California, 33⅓ per cent; Utah, 40 per cent; North Carolina, 40 per cent; Indiana granted a reduction ranging from 50 to 75 per cent, and Georgia from 50 to 90 per cent.

Ten out of twenty states replied that the medical allocation was pro-rated. The average medical percentage of proratement was 5.4 per cent in the seven states which submitted figures. One state reported a plan where the medical budget was built up on allocations of seventy-five cents a family.

Rhode Island has a unique fee reduction arrangement. It is: No reduction for the first $100.00; second $100.00, 25 per cent reduction; third $100.00, 33⅓ per cent reduction; fourth $100.00, 50 per cent reduction, with obstetric cases not included.

All in all, Montana stands above the average in fee schedule. It is plain to see that State Medical Societies that have maintained adequate fee schedules are prospering as a result of it. In states in which the medical fees allowed are excessively low, a reason can be found in the fact that these states have taken a 50 per cent reduction on an already inadequate fee schedule.

It is also quite evident that the most successful plan of committee control is that plan which invests the power in the local county committee. The greater majority of states have this plan.

The question in my mind now is what changes the government is going to make. In the replies received there is a suggestion that the government soon will announce a different arrangement of medical care. In the Texas report their secretary reports: "Just now there is pending a radical change in this service. Just what will happen no one seems to know." The secretary from California states: "It is quite probable that the entire program of medical relief will be turned over to the United States Public Health Service," and to top it all Kansas, which did not have a contract, was able to arrange a plan with the State Relief of that state. They referred this plan to Washington for final approval. Washington rejected the plan. He states that the refusal of the plan was based upon the fact that the Federal Government plans a new relief setup in the near future which will consist of a rather well-developed panel system.

J. L. O'Rourke, M.D.,
Anaconda.

PRESIDENTIAL ADDRESS

C. E. K. Vidal, M.D.,
GALEN, MONT.

Members of the Profession, honored guests of the Association:

Convention decrees that at our annual meeting the retiring head of our organization make an address. Convention has also in large measure defined the type and character of such an address. Our family affairs, aired and adjusted in the just completed session of the House of Delegates, leaves this occasion to become more or less a public one. Wearing our best bib-and-tucker, we offer our principles, our functions, and ourselves, to the people's view. We place ourselves at the bar of public opinion, where our merits and de-

merits may be apportioned and judged. Obviously, such an occasion behooves our president to be circumspect, and such insistent circumspection too often tends to banality, to the avoidance of subjects which are in any degree controversial. Omlets, however, continue to require the breaking of eggs. *Time*, that sprightly and widely-read news weekly, tells us that of all our learned professions, medicine has the poorest press relations. Such a statement, coming from such a source, cannot be ignored. Society is an intricate structure. The institution of the press, like the institution of medicine, is a vital component of that structure. In an appeal from *Time's* verdict, it is proposed to briefly dwell on some of the factors that might appear to have warranted it. In order that the public may understand and appreciate our position, it becomes necessary to review some fundamentals.

Our social unit is the family. The family results from the union of the man and his mate. Once established, it becomes the integral part of our social edifice. The state is its servant, not its master. The family is resilient, strongly resistant to weakening influence, and is, as far as history can teach us, indestructible. The physician, in a constantly-increasing degree, is a valued friend and essential servant of the family. The afflictions of the family are primarily his concern and theirs. Only secondarily do these afflictions concern the state. Our much-abused and criticized standard of ethics, our rules of conduct, revolve around the safeguarding of the family, of the jealous preservation of its privacy and the constant and unceasing endeavor to provide, as promtly as they are proven worthy, all the newer and better things that science has to offer for its protection and relief. To achieve these ends to the fullest degree possible, it is essential that the physician earn and retain the confidence of the family. And because these aims may run off at a tangent from those of the press, there has arisen an unfortunate lack of mutual understanding. It is unfortunate in that it tends to undermine that confidence to which your speaker has just referred.

The press furnishes news. If this news has an element of human interest and pathos it is more salable news. The child with the upside-down stomach makes splendid copy. So, too, does the crippled boy limping painfully on his crutches across the highways of three states to reach a miracle man. Why does our profession look askance on this sort of publicity? Is it from motives of selfishness or jealousy? Not at all. We look at it askance mainly because it tends to undermine the confidence of a particular family or community of families in their particular physician. Competent surgeons in every state of the union repair diaphragmatic hernias and successfully treat infantile paralysis.

Then again it places in an embarrassing position the unfortunate gentlemen who make no claims whatever to being miracle men.

We pick up our morning paper and see that Mrs. ABC entered the DEF hospital yesterday for a major surgical operation. Gentlemen of the press, is not this Mrs. ABC's affair? Granting that the item has news value, is not its publication what Kipling calls an invasion of privacy? A very considerable section of the public question why our ethics condemn publicity and advertising. The remark is frequently made that if so-and-so is clever, he should have the right to proclaim the fact. Here again our motives are misunderstood. Medicine is a profession, not a trade. A tradesman logically and honorably buys publicity for profit. A physician's primary aim and object is to bring comfort and relief to suffering humanity. Consequently, to him the profit motive is the minor motive. Consequently again, the medical man who advertises must make the profit motive the major one. Regretfully, his confrères must cease to eat salt with him. It has been urged, by some high in our councils, that our societies boldly adopt a policy of radio advertising. Are we to throw aside our dignity and decorum, valuable assets to our patients, to enter into competition with Alka Seltzer, Crazy Water Crystals and Huey Long?

Education in matters of health, logically conducted, has always had the stamp of professional approval. Many of our most brilliant members have adopted public health careers, with credit to themselves and outstanding benefit to the public. When the press voices the feeling that we are lagging behind in approval of programs that public health organizations seek to bring about, it should be remembered that these very programs are too often fostered by ambitious amateurs who know by intuition everything that it has taken us years to learn. We sense their frequent futility and impracticability. Public health activities can well be restricted to education and prevention. We will offer a resolute and determined opposition to any extension of these activities to include the *treatment of the sick*. We want the public and the press to realize that we are of necessity *individualists* dealing with suffering *individuals* whose pains the

state cannot share and whose greatest aid and comfort in time of peril is the skilled physician who is also the trusted friend. All the fabric of our policy, all the basis of our endeavor, is to further and strengthen this relationship. And in the striving for this furtherance, we ask for a fuller and wider understanding from the people—we ask for a more generous treatment from the press.

So much for generalities. Now to review some of the salient events that have concerned our fortunes during the past year. Death has in full measure taken his toll of us. Andrus, of Miles City, McDonald, of Butte, Peek, of Missoula, sat life's comedy out. The play ended and the curtain fell on careers crowned with honor and achievement. Untimely was the death of Treacy, a worthy scion of a worthy sire. Father and son have made no mean contribution to Montana medicine. Dark tragedy took from us Pat McCarthy, a brilliant surgeon at the very peak of his career. Pigot's passing, too, was untimely. For the entire length of his career, his interest in and service to this association was outstanding. Your president was privileged to attend his funeral and to watch the whole town follow him to the sunny hillside where he was laid away. Of Hobson of Missoula, more anon. Hardly had this paragraph been written when news came that Swoboda, of Butte, in the flood-tide of his young life, had answered the call.

"Death is not rare, alas, nor burials few."

As previously stated, our family affairs are thrashed out in the House of Delegates or referred by them for consideration at the business meeting that will conclude this session. Therefore, it is not opportune to discuss at this time the intensely controversial subject of medical economics as it relates to the care of relief patients. But if one can not speak of measures, he may at least refer to men. Your president, on assuming office last July, found an agreement in existence, the carrying out of which rested on the shoulders of three of our members. Deeming it an unfair burden, he added two to their number. He *did* not believe then and he *does* not believe now that a more intelligent representative or honorable group could be found in the ranks of the Association. They have given you for the past year a brimming measure of unselfish service. They have traveled many a tiresome mile and labored many a weary hour. *The character of the coin in which they have been paid is known to you.* When these troublesome times have passed and we sail calm waters again, it would be well for the younger men to give occasional thought to J. B. Hobson. Last September, firmly in the grip of a pneumococcus infection, he drove alone from Missoula to Helena, spending a restless night in a not too comfortable hotel room. Eight in the morning found him with his committee working arduously throughout the day in a badly-ventilated basement room. He insisted on returning to the job after an evening dinner at which he ate nothing. By nine o'clock the pain of his pleural involvement became unbearable, and he left us to go to his room. Shortly after midnight his fellow members completed their task and called to find him with an obvious lobar pneumonia. We helped him to the hospital where, five days later, the end came.

Does your speaker indulge in hyperbole when he tells you that Dr. Hobson died in your service?

Possessing many of the elements of drama was the effort of the osteopaths to pass, at the recent session of the legislature, a revolutionary bill. Its purpose was to confer on the members of their cult all the rights and privileges of the medical profession. With a well-organized political machine they succeeded in bringing it to the House with a favorable committee report. It was decisively defeated in committee of the whole. On our side we were caught napping. It was a surprise offensive, a clean break-through. A counter-attack was hurriedly organized and successfully conducted. It was equally a pleasant surprise to see how an emergency could unite the profession and to note how large a majority of the people of the state appreciated our position and rallied to our support. It is to be regretted that your president cannot dispense material rewards, but, figuratively, at least, he decorates John Donovan, the zealous and able chairman of the legislative committee, with the red ribbon of the Legion of Honor. He pins on the breasts of Flynn, Shanley and Pat Kane, the three musketeers who led the counter-attack, the *Croix de Guerre* WITH PALMS.

To speak seriously again, what lessons can be learned from the episode? The necessity of unity. A profession rocked by discord and upset by dissension is always vulnerable to attack. Why are only seventy-three per cent of the medical men of the state members of the Association? Why not ninety-five per cent? Our esteemed past president, in his address last summer, stated that we have always leaned over backwards to be fair and unprejudiced in deal-

ing with the cults. He was wholly and unqualifiedly right. To one who sat at the committee hearings and heard the talk of a quarrel between two schools of medicine, the conviction arose that we had been too fair. The public should know that there is but one school of medicine, evolved through the centuries and based and builded on the unshakeable foundation of scientific truth. In rearing it, these cultists, these heretics, have mixed no concrete for its footings, have mortised no beams into its superstructure. Yet they wish to enter by the back door and use the completed building for their own.

Your president was fortunate in having had an opportunity to attend, as your representative, the May meeting of the Academy of Medicine in Edmonton, Alberta, and to contact members of the profession both going and coming. We are happy to be able to extend a hearty greeting to those good enough to return the visit and be present at this meeting. It would seem that there should be a closer relation between us than at present exists. We are similar states with similar problems. Montana in its early days owed much to Canadian medicine, while in turn, we old Canadians have tried to render a full and unqualified measure of service and loyalty to our adopted state. From many of our northern towns, Calgary is a pleasant day's drive, Edmonton but a little further along the road. Could not the Medical Profession be the appropriate leaders of a movement for closer relations with Alberta?

Your speaker cannot close without sounding a note of personal gratitude. The honor of being your president came to him late in life, his contemporaries had mostly passed to their reward and it was with some misgivings that he entered upon his duties. But through the din of this troubled year he has received a generous measure of kindness, a wealth of support, a full degree of co-operation. This has come from individuals and groups, from councilors and committees. Especially is he grateful *to the younger men* from whom he has never failed to draw courage and inspiration. On their shoulders rests the future of medicine in Montana. *We need have no misgivings.* They will meet the tasks before them "with minds and souls neither ignorant nor inadequate." May they have work to do and strength enough to do it. May they carry on with courage, with resourcefulness, and, best of all, with honor.

RECENT PROGRESS IN TUBERCULOSIS AND ITS PRACTICAL APPLICATION IN DIAGNOSIS, TREATMENT AND PREVENTION*

J. Arthur Myers, M.D.
MINNEAPOLIS

OUR knowledge of tuberculosis has been developed through long and tedious investigations by such workers as Laennec, Klencke, Villemin, Koch, and Roentgen. The work of such investigators has not only built up a great fund of scientific and practical information, but also has stimulated hundreds of other workers to make investigations in the field of tuberculosis. In the minds of many persons, research work consists only in activities carried on in a well-equipped laboratory with incubators, test tubes, microscopes, etc. While this kind of research work is excellent, there are other phases of investigative work which may give just as much information with as great practical application. Nevertheless, in the appropriation of funds for research, most organizations still give preference to those projects which have to do with the laboratory type of study. David A. Stewart recently said: "When will we get the idea into the minds of the Olympians who control our fates—or our funds—which is much the same, that a test tube gives only second rate material for research, and living people the first rate material? With clinical and sociological questions innumerable to be studied, why should all the prestige go to the florence flask or the microscope?" Fortunately, in the field of tuberculosis we have not only those working with the test tube and the microscope but also those working on clinical and statistical investigation. In fact, the research program on tuberculosis is very inclusive, for it now deals with nearly all phases of the disease and through research work we have learned new facts during the past fifteen years which have brought about a new era in the field of tuberculosis.

In this country, there have not been many attempts made at co-ordinated research in medicine, that is, where a good-sized group of individuals are assigned different phases of a single problem, after which the results of the various workers are brought together. However, the National Tuberculosis Association, largely through funds derived from the Christmas seal, for

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approximately ten years has had a Research Committee, which has promoted co-ordinated research. One of the chief aims of this committee was to learn more about the chemistry of the tubercle bacillus. Therefore, various strains of tubercle bacilli have been grown in large quantity, from which have been isolated in pure form the varions fractions, such as protein and carbohydrate. With these fractions it has been possible to study in an experimental way their effects upon the animal tissues in tuberculosis; that is, which fraction is responsible for fever, etc. This has been done with the thought that if sufficient information is obtained, it may be possible to devise some form of chemotherapy of value not only in controlling symptoms but in the control of the disease, itself. Through the isolation of the protein fraction has come a practical accomplishment, namely, the development of Purified Protein Derivative, to be used in tuberculin testing. For a long time it has been known that the tuberculo-protein in Old Tuberculin was responsible for the cutaneous reaction in animals or persons infected with tubercle bacilli. The preparation of Purified Protein Derivative will probably prove to be a distinct advance in our testing material, since it is easily standardized and retains its potency.

Another activity of the Research Committee of the National Tuberculosis Association has had to do with the standardization of x-ray technic. It is a well-known fact that x-ray films through over or under exposure may be rendered useless in diagnosis, whereas, the film properly exposed is extremely valuable in detecting the location and extent of shadows. Therefore, it is a very laudable undertaking to standardize the technic and make it available to all physicians and technicians who do x-ray work.

In recent years, such workers as Medlar, Wiseman and Doan, and Sabin, have made extensive studies of leucocytes during the course of tuberculosis in the animal and human body. Prior to this time, we were of the opinion that the leucocyte count was of little or no practical value in tuberculosis work. However, these workers have called especial attention to the fact that the neutrophile (pmn.) plays the chief role in tuberculous abscess formation and in the extension of ulcers. The monocyte is the important cell in the formation of new tubercles and, therefore, is present in abnormally large numbers when there is extension of disease with the formation of new tubercles. The lymphocyte is present in numbers beyond normal when the tuberculous lesion is healing. Special differential studies of the neutrophiles and the lymphocytes have also been found of practical significance. Medlar divides the neutrophiles into the non-segmented and segmented forms, the former being the young cells. When he finds the non-segmented neutrophile in a percentage much beyond that seen in normal blood and, particularly, if this persists from day to day in a case of definitely established tuberculosis with no other manifest cause for the change, it is evidence to him that the demand for new neutrophiles has probably been increased through abscess formation and ulceration; that is, there is breaking down of the lesion.

Wiseman and Doan divide lymphocytes into young, mature, and old types. They know that the proportionate distribution in the peripheral blood of the average healthy adult is 4 young, 48 mature, and 48 old. Any definite change in this proportion may be quite significant with reference to a tuberculous process; for example, if the young lymphocytes reach a percentage of 15 or more instead of the usual four per cent, it is definite evidence that there is an increased demand for this type of cell and that they probably are being used in the healing of the tuberculous process. On the other hand, when there is a depression of the regeneration centers and a definite decrease of young lymphocytes in the blood stream, it is a good indication that the lesion is not being combatted in a satisfactory manner. Again, the monocyte-lymphocyte ratio has been found significant. Normally, there is one monocyte to three lymphocytes in blood; thus, an increase or decrease of the monocyte-lymphocyte idex is of considerable significance in a definitely established case of tuberculosis. When there is a rise in the index, it indicates that the monocytes exceed the lymphocytes in proliferative activity and, therefore, new tubercle formation probably is occurring, since it is the monocytes which become the epithelioid cells and are, therefore, much in demand when new tubercles are being formed. On the other hand, when the monocyte-lymphocyte index is decreased, it is an indication that the lymphocytes exceed the monocytes in proliferative activity and, therefore, the increased demand in lymphocytes is an indication that healing is taking place.

In the differential leucocyte studies, however, one must constantly keep in mind that the reactions are not specific; that is, they may be caused by various infections. Therefore, they are not of particular diagnostic value but when clinical tuberculosis is known to exist, they are especially

valuable in determining changes that are occurring in the lesions. In fact, by them these changes may be determined much earlier than is possible through symptoms, physical signs, and x-ray examination.

Another test that is rapidly being accepted and has been proved to be of considerable value in diagnosis and prognosis is the red-cell sedimentation test. Such workers as Greisheimer, Cutler, Spector and Muether, and Schonwald, have presented results sufficient to convince many clinicians that this test is of great value in routine examinations. It is simple to perform, as it consists of gently mixing one-tenth of a cubic centimeter of three per cent sodium citrate solution and nine-tenths cubic centimeter of blood from the patient. This is then transferred from the syringe in which it was mixed to a specially graduated sedimentation tube. The upper level of the column of sedimenting erythrocytes is recorded every five minutes for an hour. The rate of sedimentation in blood from normal persons has been carefully determined and while there is some variation from time to time, depending upon the amount of cellular destruction occurring in the normal body, definitely normal limits have been established. If the amount of tissue destruction is increased beyond the normal, as occurs in certain infections and disease conditions, the rate of sedimentation of the erythrocytes is increased in direct proportion to the severity of the disease. Although progressive tuberculosis very materially increases the sedimentation rate, the test is not specific for this disease. Frequently, when the test is used as a part of every routine examination, it leads one to the finding of the development of a serious condition, which may have caused the patient no definite symptoms. Again, the test may be very suggestive or give us a definite lead before the disease condition has reached such proportions that we can locate it by other methods of examination. So far as we know, the only physiologic process that results in rapid sedimentation is pregnancy. This test is inexpensive, easy to perform, and is very valuable in diagnosis.

While tuberculosis is only one of the conditions which results in an increased sedimentation rate, one must always consider it when such a rate is found. In definitely established cases of tuberculosis, the sedimentation test is a delicate method of determining the activity or progressiveness of the lesion. The more severe or progressive the lesion, the more rapid the sedimentation rate. Therefore, when a patient comes under observation and treatment with a rapid sedimentation rate, periodic testing is of considerable value in determining the effectiveness of treatment. Frequently, the sedimentation rate will be seen to decrease before symptoms have improved and long before the x-ray film shows any change. On the other hand, when a patient is doing well and the lesions apparently are coming under control, symptoms have disappeared, and the sedimentation rate has become approximately normal, a sudden increase in the rate may be very significant, provided no other condition which causes increase has developed. Such an increase in rate is sufficient warning to institute or re-institute more drastic treatment. The increased rate provides us with information concerning the reactivation of the lesion before symptoms, physical examination, or x-ray film, are of any avail. Therefore, this test should become routine in general diagnosis and once a disease condition that influences the rate is established, the test should be performed periodically throughout the course of the disease, as fluctuations in the rate are extremely helpful in prognosis and in directing treatment.

The investigations of bacteriologists and pathologists, such as Robertson, Opie, Sweany, and Terplan, have in recent years cast a great deal of light upon tuberculosis. Through their work, the fact is now established beyond doubt that tubercle bacilli remain alive and virulent in and about the old first infection type of foci for many years and often throughout the lifetime of the individual. Not long ago we believed that once dense capsules of fibrous tissue and true bone closed the tuberculosis chapter as far as that particular focus was concerned. However, the pathologists' revelation that capsules surrounding foci of first infection type tuberculosis may resorb and thus set free upon allergic tissues living virulent bacilli greatly strengthened our belief in the endogenous source of reinfection type tuberculosis. While this adds some pessimism, it only emphasizes the great importance of preventing the first infection foci. If all reinfections were from exogenous sources, it would not seem difficult to prevent them by avoiding exposure to open cases of tuberculosis. However, the prevention of the first infection through such sources can be accomplished with as little difficulty as the prevention of reinfections. It is by no means necessary that the capsules of primary foci resorb in order that tubercle bacilli may escape. The work of Miller and Lincoln convinces one that hematogenous dissemination very frequently fol-

lows the establishment of the primary complex. No doubt, the foci in and about the central nervous system, which Rich and McCordock found to be responsible for the bacilli resulting in diffuse meningitis, were at some previous time the result of hematogenous dissemination. When such serious conditions develop indirectly from the apparently innocent primary focus, there seems little argument for any procedure except that which will prevent the development of first infection type tuberculosis.

Leading investigators, such as Park and his co-workers, Petroff, Feldman, Larson, Clawson, Lurie, Rich, and Baker, have done valuable work with tubercle bacilli during the past few years. A good deal of emphasis has been placed upon BCG, as well as virulent bacilli. The prime object of most of this investigation has been to determine how much immunity can be established in animals and human beings. Park's work leads him to the belief that BCG is of considerable value in protecting infants and children against clinical tuberculosis. Feldman and Petroff point out very definite potential dangers from the use of BCG. Larson finds that it does not protect cattle against the onslaught of tuberculosis if they are later allowed to be exposed to tuberculous animals in the natural way. Clawson believes that BCG killed by heat and introduced by vein affords some immunity in the animal and avoids allergy. Lurie is of the opinion that by vaccinating rabbits with human tubercle bacilli and later exposing them to others suffering from tuberculosis of the bovine type, he can reduce the incidence, extent, and mortality of the disease and that he can change its pathological character and retard its progress. However, he says: "The disease acquired by vaccinated rabbits shared many characteristics with adult type tuberculosis in man."

Excellent experimental work has been carried on by Krause, Gardner, Willis, Burke, Lemon, Feldman, and many others, bringing to light or confirming the facts that the first attack of tubercle bacilli upon the animal tissue results in a less intense and less harmful reaction than bacilli of reinfection; that lesions of first infection in the animal body are very similar to those in the human body and that this also holds true for lesions of reinfection; that baby animals are no more susceptible to tuberculous infection than adults of the same species when proportionate doses of tubercle bacilli are administered; that bacilli of the first infection in the animal body are met by a reaction on the part of the tissues which is non-specific and does not differ from the reaction of the tissues to inanimate material of the particulate type.

The largest animal experiment with the most far-reaching practical application that has ever been performed in this country is being conducted by the veterinarians and closely allied groups. In North America in 1915, educational work was begun, laws were enacted, and funds were appropriated for the study and control of tuberculosis in cattle. The tuberculin test for cattle was first used by Gutman of the University of Dorpat, Russia, about 1891. Pearson of Pennsylvania and Russell of Wisconsin employed it in 1893. When large numbers of cattle were tested and the positive reactors slaughtered, it was found that as high as 92 per cent had tuberculous lesions which could easily be visualized by the naked eye and that many of these animals had far advanced disease and had been transmitting tubercle bacilli to other animals and to human beings. Periodic testing was done and herds were protected against exposure from imported, untested animals, so that the incidence of reactors became smaller and smaller and postmortem examinations of those reacting to the test showed less and less pathology. Finally, in large groups of positively reacting animals the autopsy examinations showed little or no disease that could be detected by the naked eye. This meant that the disease was being detected through the tuberculin test, while it was still of microscopic size. As time went on, in whole counties positive reactors disappeared, and the disease among cattle was completely eradicated. While this has not been accomplished in many counties, it is well on its way in the greater part of the United States. Already in thirty entire states and in 75 per cent of all the counties of the nation, the incidence of positive tuberculin reactors among cattle has been reduced to 0.5 of one per cent or less. Contrast this with the incidence of five per cent to even 90 per cent in some herds when the work began. The animals used in this experiment and practical demonstration have numbered millions and, therefore, it is of more significance than laboratory animal experimental work, where at most a few hundred animals are used.

The results of the experiments of the veterinarians of North America are in sharp contrast to those of England. Here, an order from the office of the Minister of Health in 1913 provided for the detection and slaughter of all animals suffering from severe tuberculosis or tuberculosis of the udder. Obviously, the animals were not

slaughtered until they were ill and most of them were already spreading tubercle bacilli. No attention was paid to the disease until it had reached its maturity. The result was that by 1932, it was estimated that 40 per cent of the cattle of England had foci of tuberculosis in their bodies. Therefore, after nineteen years of work, approximately as serious a tuberculosis situation existed among the cattle of England as when the work began.

The difference in results between England and North America lies in the interpretation of the word "tuberculous." In England it applied only to animals that were ill or were found to be disseminating tubercle bacilli; in America, it was applied not only to ill animals but also to every animal which reacted positively to the tuberculin test no matter how sleek and healthy in appearance or how valuable. The veterinarian of America considered every positive reactor as having foci of tubercle bacilli in the body. It was perfectly obvious to him that the only way to control and eventually eradicate tuberculosis from the animal herds was to prevent these foci from developing; therefore, he recommended the slaughter of all animals whose bodies contained potential reservoirs of tubercle bacilli. The result of these investigations has not only been of great economic importance to this country, but it is also solving a very serious public health problem, namely, that of the bovine type of tubercle bacillus causing disease in the human body.

When the order for the slaughter of tuberculous cattle was made effective in England in 1913, large numbers of human beings were suffering, deformed, and many were dying of tuberculosis caused by the bovine type of tubercle bacillus. A somewhat similar picture existed in North America. When an investigation was made in England in 1932, it was not only found that tuberculosis was still extremely prevalent among the cattle, but that the bovine type of tubercle bacillus was still causing very serious disease among human beings. It was estimated that about six per cent of all human deaths from tuberculosis were caused by this type of bacillus; that about 2,000 deaths, mostly among children, was occurring annually from that cause and that at least 4,000 new cases of the bovine type tuberculosis in human beings were developing annually.

In America in those counties and states where the cattle tuberculosis program has been carried out successfully, the bovine type tuberculosis in human beings has decreased almost to the vanishing point; in fact, there no longer exist enough cases of this type of disease to teach the students of nursing and medicine what we desire them to know about it.

Best of all, this research work of the veterinarians has taught us much about the control of tuberculosis in the human family. It should for all time convince those who previously had failed to recognize the specificity of the tuberculin test and its practical application in the diagnosis of tuberculosis. Our workers in human medicine too long looked upon everyone as having a "little" tuberculosis; they tried to pacify themselves by believing that tuberculous infection is an asset and that the first infection immunizes and protects; they set up a sharp dividing line between tuberculous infection and tuberculous disease, just as was done with the cattle in England; they did almost no work until this line was passed and the individual was ill from tuberculosis. The result is that in the human family in sharp contrast to the cattle family, we now have a constant crop of tuberculosis which keeps most of our sanatoriums filled to capacity and spreaders of tubercle bacilli in nearly every community. The research of the veterinarians has taught us that if we are ever to meet with anything like the success they have met, we must no longer limit our work to the ill and dying but must go back to the very beginning of tuberculosis and look upon every child or adult who reacts positively to the tuberculin test as a potential reservoir of tubercle bacilli. There is usually a period of months, and more often years, between the appearance of sensitiveness of the tissues to tuberculo-protein and the appearance of symptom-producing tuberculosis. Therefore, in our tuberculosis work, we must consider the apparently healthy individual with a full working capacity who reacts positively to the tuberculin test, as well as those whose disease has progressed to the illness-producing stage if we are to approximate, in the human family, the decisive results of the veterinarians.

The research work on the co-existence of diabetes and tuberculosis, particularly that of Root and Joslin, has brought to light a very practical problem, inasmuch as the treatment of diabetes through diet, insulin, etc., is so well in hand and the treatment of pulmonary tuberculosis through artificial pneumothorax, etc., is so successful, if the disease is detected at the proper time. Many persons who have diabetes and tuberculosis co-existing can now lead reasonably

normal and useful lives. In times past, we looked upon pulmonary tuberculosis as a highly fatal condition when it occurred in the diabetic but perhaps our greatest difficulty was that we were treating the patients for diabetes and were quite oblivious to the fact that tuberculosis frequently co-exists in the bodies of these patients and reaches the advanced stage before symptoms appear. Joslin is doing a unique work, based on knowledge obtained from research on actual human material, by launching a campaign among physicians for a careful examination of the chest, including x-ray films, of every person who has diabetes. This not only will greatly extend the lives of many such patients but it will also prevent the exposure of the patients' associates to tubercle bacilli.

The research of Slater on the tuberculin test in 1924 has had a far-reaching effect. Up to that time, many were still quoting the European figures with reference to incidence of positive tuberculin reactors among children, although Veeder and Johnston had already shown that in St. Louis the incidence was far below the figures quoted from Europe. Slater's work showed such a low incidence (approximately 10 per cent) of reactors, that it stimulated many others to administer the tuberculin test to groups of children. Even since his work was published, there has been an almost constant increase in the number of tuberculin tests administered. This work has also been stimulated by the excellent results which were being obtained from tuberculin testing in cattle.

When Slater made his investigations, we thought there was little or nothing more to learn about tuberculin but the great demand for this material in testing led to intensive research work on tuberculin tests. Among other practical results of research was the standardization of dosage of Old Tuberculin for the intracutaneous test by such workers as Aronson. The standard dose now in use consists either of 0.01 or 0.1 milligram for the first test. All negative reactors to this amount of tuberculin are given a full milligram for the second test. Intermediate doses, such as we used at one time, have become obsolete; they are not only useless but if one stops at an intermediate dose, one fails to obtain the greatest value from the tuberculin test. Outstanding work has been done by Long and Seibert, as part of the program of the Research Committee of the National Tuberculosis Association. Since the protein fraction of Old Tuberculin was known to be responsible for the positive reactions, they isolated the tuberculo-protein in pure form. The result is Purified Protein Derivative, which is already being used quite extensively in this country. Its dosage has been standardized and the directions for its use accompany each package.

Of considerable significance also was the work of investigators on the perfection of various methods of administration of tuberculin, aside from the intracutaneous method. For example, the work of Lovett on the percutaneous test, as well as that of Wolff on tuberculin ointment, is of great value, inasmuch as there are still many persons who refuse to have a needle used or even an abrasion of the skin in the performance of the test.

As the incidence of infected persons decreases, the value of the tuberculin test increases. It serves as a very fine screen in selecting those persons who need further examination for tuberculosis. By it, large sums of money are being saved which would otherwise be spent on useless examinations of persons who have never been infected with tubercle bacilli.

Research work through the use of the tuberculin test and the x-ray film of the positive reactors has been in progress among children for a good many years; in fact, one group has been making investigations for fifteen years. The various groups, including such workers as Chadwick, McCain, Pope, and others, have brought to light through these investigations some very significant and practical findings.

For example, we have learned that the destructive type of clinical tuberculosis in chronic form is a very rare disease before the period of adolescence. Up to the time this fact was established, large sums of money were being expended in making x-ray film examinations on many thousand children in this country. This must not be looked upon as a waste; it was research and nearly all research may seem wasteful, yet if a fact which has great practical application is revealed, the money expended on research is an excellent investment. However, to continue to make periodically large numbers of x-ray films of the chests of children, even those reacting positively to the tuberculin test, would be wasteful as far as tuberculosis is concerned. From these investigations, it has been shown that quite frequently the x-ray film brings to view other conditions, such as changes in cardiac outline, foreign bodies, etc. Therefore, it is quite possible that we may arrive at the time when routine x-ray films may be recommended for all children, regardless of the tuberculin reaction.

Another fact of great significance, which has resulted from the researches on children, is that those who react positively to the tuberculin test are in greatest danger of later falling ill from clinical disease. Inasmuch as this number apparently is decreasing quite rapidly, it is now possible in most places to keep the majority of them under close observation when they reach that time in life when the destructive, clinical type tuberculosis begins to become prevalent. In a group of children sufficiently large to be significant, it has been observed over a period of fifteen years that the child who reacts positively to the tuberculin test is five times more likely to develop clinical tuberculosis during the teen age period than the child who reacts negatively to the test. In another group of children very carefully studied, it has been shown that those who have evidence of calcium deposits in the lung parenchyma, the lung hilum, or both, are five times more likely to fall ill from the clinical disease during the teen age period than children who react positively to the test and have no x-ray film manifestations at the time.

A third unusually significant fact revealed by the researches on living children during the past fifteen years is that the chronic, reinfection form of pulmonary tuberculosis usually exists over a period of two or three years before it causes symptoms or abnormal physical signs. During most of this time the x-ray film will reveal a shadow cast by the lesion. This fact is most practical for it means that we must examine the positive reactors who are apparently healthy, particularly, in the teen ages and thereafter, if we are to find tuberculosis when it can be treated most successfully and before the lesions have broken down so that the disease is communicable to others. Thus, through the investigations on living children, our knowledge of the diagnosis, and the control of tuberculosis has been very definitely crystallized. Fifteen years ago, we were groping in the dark; today, we see the problem very clearly, so clearly, in fact, that with adequate funds and sufficient co-operation the disease can very quickly be brought under control in any community.

When it was learned that large numbers of healthy persons must have x-ray film examinations, it was obvious that our old method of making films of the chest was not only too expensive but was also too slow. The old method could not possibly carry the load, any more than the ox-cart, which was quite satisfactory for its day, could carry the traffic in this day of motor cars and airplanes. This necessitated further research in the x-ray field. Emulsionists were set to work on investigation projects, and the result is an x-ray film on paper with one-half the previous cost. Another result is the x-ray film in rolls like kodak films with space for one hundred chest exposures on a single roll. This materially reduced the time element, the expense of loading and unloading casettes, etc., and very materially lessened the time and expense required in the development of exposed films. No x-ray camera was available to make rapid exposures. Further investigation led to the invention of special devices and the alteration of others, so that now a camera is available capable of making 600 to 900 film exposures in a single working day. We now have a method which is not too expensive and yet which provides adequate capacity for making all the necessary x-ray examinations in a satisfactory manner of apparently healthy positive tuberculin reactors.

Further investigation was necessary to determine whether this new equipment would produce satisfactory results. This has been carried out by such persons as Barnard, Amberson, Edwards, and Loew. Their studies show that the finished product is entirely satisfactory for finding pulmonary tuberculosis in the pre-symptom stage. Unfortunately, this method has not yet been accepted everywhere or is there yet enough equipment available for all the work that needs to be done.

In the meantime some investigations have been carried on with the fluoroscope by Fellows, Reid, Diehl and others. These investigators have shown that the fluoroscope is much more valuable in screening out cases with lung shadows than many of us would previously believe. One well-trained in the use of the fluoroscope can actually detect no less than 95 per cent of the significant shadows which the x-ray film will bring to light. Those which are overlooked by the fluoroscope are usually very small and if this examination is made a periodic affair those of this small number which are progressive will be detected on subsequent examinations and often before the lesions are disseminating tubercle bacilli or have caused illness. This is a great step in advance in tuberculosis case-finding.

However, we must not overlook the fact that the fluoroscopic examination does not leave a permanent record of shadows which may be compared with those of subsequent examination, as the x-ray film does. Moreover, we must not overlook the fact that these rapid screening

methods are being recommended only for apparently healthy persons who otherwise would not be examined. For those who have symptoms and report to physicians' offices, the examination should be conducted in the usual manner.

Before investigations were made through the tuberculin test and the x-ray film, we were largely dependent upon physical signs, symptoms, microscopic examination for tubercle bacilli, and the postmortem findings, for our knowledge of tuberculosis. Therefore, our conceptions of this disease were somewhat limited. Our conceptions have been definitely broadened and we have a much greater understanding of tuberculosis in the human body as a result of investigations on human beings through the use of the tuberculin test and the x-ray film. For example, we have learned that primary or first infection type tuberculosis of itself usually does not kill infants. Furthermore, we have learned through the study of students of nursing and medicine that adults who have escaped tubercle bacilli through infancy and childhood develop a very benign primary tuberculosis if they become infected in adult life, completely breaking down the old idea that primary tuberculosis is a highly destructive disease in adults.

Until recent investigations were made by such workers as Crabtree, Brown, Burns, Ringle and Feldman, we believed that control of tuberculosis among Indians, Negroes, and Mexicans was almost a hopeless task, largely because we thought primary tuberculosis was so destructive among them; that they had no resistance and were highly susceptible to it. We now know that in infancy and childhood the Indian, the Negro and the Mexican controls the first infection type disease in approximately the same manner as the white child controls it. Investigation has shown that while the incidence of positive tuberculin reactors is usually much higher in the Indian, Negro, and Mexican children, this may be accounted for by the exposure opportunities which are many times greater than among the white children. Inasmuch as every child with a positive tuberculin reaction is a potential case of clinical tuberculosis in adult life, one must expect many more cases of clinical tuberculosis among adult Indians, Negroes, and Mexicans than among white adults. As to whether the adults of such races and nationalities develop malignant form of clinical tuberculosis because of racial difference or because of much more massive exposure is still a matter of considerable controversy. Suffice it to say that investigations have proved that the children have the same powerful defense mechanism which successfully controls the first infection type disease that white children have.

One of the most fruitful fields for tuberculosis research among young adults in the past few years has been in those schools where the students are constantly and intimately exposed to tuberculous patients, namely, schools of nursing and medicine. In some parts of the country where the incidence of positive reactors is a good deal less than 50 per cent (in some instances as low as 10 to 15 per cent) in young adult life, it has been possible to administer the tuberculin test to students on admission to colleges and universities to determine which react positively; then repeat the test periodically on all others as long as they remain negative. Some of these students select schools of law; some schools of education; others schools of medicine and nursing in the same university with the same general environment. The increase in positive tuberculin reactions is very slight during the four college years in most of the schools but in the schools of nursing and medicine the increase is very marked, often reaching 85 to 100 per cent in the senior year. The fact that tubercle bacilli are spread to approximately 100 per cent of the students who care for tuberculous patients, whether in general hospitals, tuberculosis pavilions, or sanatoriums, has been reported by such workers as Heimbeck, Geer, Hetherington, McPhedran and Opie, Shipman and Davis, and Ferguson.

These studies have impressed upon us more than ever before the fact that tuberculosis is a communicable disease and must be treated accordingly. Modified contagious technic has been recommended and this is laudable, but it is only a stepping stone for it has not been shown to adequately prevent spread of tubercle bacilli. The only solution is to adopt strict contagious disease technic. The general hospital or any other institution which allows pathogenic micro-organisms to spread is unclean. There is no more reason why a patient in a hospital or those who work with patients should be contaminated on a medical service than those who work with patients should be contaminated on a surgical service. Researches in this field are hastening the adoption of a contagious disease technic for tuberculosis, no less strict than that now employed in other communicable diseases.

A recent investigation by the American Medical Association revealed the fact that in 1934 over 45,000 tuberculous patients occupied beds in general hospitals. While numerous workers and the

organized medical and hospital societies have for a long time, on the basis of observation, recommended the use of general hospitals in the isolation and treatment of tuberculosis, yet the extent to which this recommendation had been adopted was a revelation. Furthermore, the investigation of the American Medical Association revealed the fact that there are 150,000 vacant beds in the general hospitals of this country. There are now approximately 80,000 beds in the sanatoriums. With the general hospitals opening their doors to tuberculosis, we no longer need to devote much energy or expend funds in providing places to isolate tuberculous patients; we can now concentrate upon actual tuberculosis work.

Investigations in other communicable diseases led to the fact that treating only the sick had little influence upon the control of the disease. Epidemiology must be employed; that is, there must be an attempt to find the source of the disease that caused the patient's illness. Moreover, effort must be made to observe carefully those exposed to the sick person; not that all of them would fall ill, but enough would to keep up the vicious cycle. Thus, the control might be likened to fighting a fire, where the fire department concentrates upon the building which is in great danger of being destroyed. However, a reserve force is available to detect the sparks that find lodgment on the roofs of other buildings in the vicinity. We are, at last, conscious of the fact that tuberculosis is one of the most communicable diseases, and investigations have finally been sufficiently convincing to extend epidemiology to tuberculosis. Probably there is nothing which stimulated the public interest so much and impressed the medical profession and all other health organizations of the importance of this work as the slogan in the Early Diagnosis Campaign of the National Tuberculosis Association in 1932, "Tuberculosis Causes Tuberculosis—Every Case Comes From Another," and the slogan of 1933, "From Whom Did He Get It—To Whom Has He Given It?" The result has been that epidemiologists have been appointed by state and local organizations and large numbers of practicing physicians are now taking advantage of epidemiology in protecting the families of their clientele against tuberculosis.

On the basis of facts revealed through investigation a movement has been initiated for the certification of persons with regard to tuberculosis. Some schools of education require adequate examination for tuberculosis before recommending their graduates for certification to teach. In this manner, cases of tuberculosis in communicable form are detected and are not permitted to enter the teaching profession until the disease has been adequately treated. There already exists in many states, laws requiring health certificates of all teachers but such certificates usually are not sufficiently inclusive; therefore, boards of education in many places are requiring a certificate which includes the tuberculin test and the x-ray film of the positive reactors. When this work is properly done, the teacher may be safely certified with reference to tuberculosis. We must constantly keep in mind that tuberculosis in communicable form increases in the population with the decades and, therefore, to be effective certificates must be periodically renewed.

Already some schools of nursing issue certificates of health to those graduating at the regular commencement exercises. These certificates show that tuberculin tests have been administered and the positive reactors have had recent x-ray films of the chest; that they have been immunized against diphtheria, typhoid fever, and smallpox. Any nurse who carries such a certificate of recent date should be safe to bring into the home or into the hospital ward so far as spreading of these communicable diseases is concerned but here again, the certificate should be renewed at least annually. In all probability, this movement will extend to other groups, such as food handlers, so that eventually nearly everyone coming in contact with large numbers of persons in line of duty will be certified with regard to freedom from tuberculosis in a communicable form.

Investigation in treatment has revealed the fact that ordinary sanatorium care or strict bed rest at home is not as effective as we once believed. A sufficient time has now passed to make worth while observations on patients treated in this manner. The number who remain well over a period of ten years is relatively small. Of course, the advanced stage of disease when first detected a decade or so ago has had much to do with this result but even with less advanced tuberculosis the results have been far from what one would like to see. Collapse therapy is being found far more effective. While it is not a new therapeutic measure, its indications have been greatly extended through actual research on patients. For example, instead of being used now only in advanced cases, it is being recommended quite extensively for progressive, minimal lesions. Perhaps one of the greatest recent practical discoveries is that collapse of the lung by artificial

pneumothorax when the disease is not too advanced often suffices in the absence of a long period of bed rest. The earlier the lesion, the more applicable is ambulatory treatment. Thus, one prevents for the patient the loss of earning capacity and long periods of hospitalization; in short, the patient is able to remain in his community and take part in the usual activities of life while his disease is being controlled and at the same time he is not a menace to others. Doubtless, as our diagnostic campaigns result in the detection of tuberculosis in the early stage in a much higher percentage of cases than at the present time, this method of treatment will be widely extended.

Research in other phases of treatment has been in progress, such as that on sanocrysin, by Sweany and his co-workers, as well as that by Duncan and his associates on hyperpyrexia. All such investigative work on actual human material is most laudable and is bringing to light very valuable facts.

There is no part of tuberculosis work that has been so badly neglected as that carried on in the physician's office. Here is where the bulk of diagnostic work has always been done and where it must continue to be done, yet we have shouted from the housetops about tuberculosis clinics and the work of various organizations, quite forgetting that while they are important, the most important work is that of the practicing physician. His interest in the early diagnosis of tuberculosis; in the treatment of the patient he finds to have tuberculosis; and in the prevention of the spread of the disease, has resulted in a renascence in tuberculosis. Everywhere physicians are accepting this new role, so that now instead of having available only a public tuberculosis clinic in a community, we are able to look upon each physician's office in that locality as a tuberculosis center. Ten years ago, few physicians would attend meetings of their local medical societies, when it was announced that papers were to be presented on some phase of tuberculosis; they took the attitude that there was nothing new in tuberculosis, which was largely true; the outlook was practically a hopeless one, because most cases came to them only when the disease was advanced. Even most of these patients, as quickly as possible, were taken away to a clinic or institution specializing in this disease. Today, local medical societies invite guest speakers on tuberculosis and fully as high a percentage of their membership attends as when other phases of medicine are presented. Local and state medical associations have committees on tuberculosis, not only to keep the membership informed on the latest developments, but also to co-operate with and direct the activities of non-medical tuberculosis organizations. In the hands of the physician lies the solution of the tuberculosis problem.

CHRONIC LOW BACK PAIN FROM THE ORTHOPEDIC VIEWPOINT*

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THE subject of low back-pain is still in the stage of imperfection and transition, Like any other subject which is not thoroughly understood, volumes can be written without its being complete. The last word on low back pain has not yet been written, and until that time, the subject will continue to be a difficult one. Diagnosis and treatment are frequently very difficult because fact and theory have not been clearly separated. In any discussion of low back-pain, there are those who believe nothing which cannot be definitely demonstrated and proved. This radical view of the subject is probably wrong. Who of us can deny that the entity of acute coryza exists just because the specific organism has not yet been demonstrated? So in low back-pain—who of you can persuade a patient with a painful "catch" in the back that there is nothing the matter with him—just because you can't demonstrate the lesion by x-ray or even pathologically? There are also those who have a theory for every kind of pain, and who can explain anything and everything, but very often only to their own satisfaction. These theorists are also probably wrong. The truth no doubt lies somewhere between the two extremes.

Since there is still much to be known about low back-pain, I shall not presume to give you the last word. My purpose, rather, shall be to consider with you the definitely-known clinical entities, and only to mention some of the more common theories. In other words, my paper will be more of a survey of the subject from the orthopedic viewpoint. Also, on account of the extensive subject, it will be necessary to discuss it more or less didactically.

*Presented before the Montana Medical Association at Helena on July 3, 1935.

Anatomy

By the lower back is meant the lower third or fourth lumbar vertebrae, the sacrum and the two innominate bones, and the soft tissues in the immediate region. Between the vertebrae are the inter-vertebral discs which consist of fibro-cartilage. These are not true joints and do not possess synovial membrane. The lateral inter-vertebral articulations, however, connecting the superior and inferior spinous processes, are true joints, *e. g.* possess joint cavities, a synovial membrane and capsular ligaments, and hence, are subject to the same injuries and diseases that affect the larger joints. These lateral inter-vertebral articulations are more or less in the sagittal plane with the exception of the lumbo-sacral joint. Here they are more obliquely situated, so that the anterior posterior x-ray plate does not show the joint in profile as in the higher lumbar joints.

The fifth lumbar body is normally inclined upon the first sacral at an angle of 40 degrees Forward-slipping is prevented by the inferior articular process of the fifth lumbar vertebrae and also by the surrounding ligaments. The spinal nerves escape on each side by way of the spinal foramina, which vary in size as do the nerves. The smallest of the lumbar foramina is the fifth, and yet the largest nerve trunk passes through it. For this reason it is easier to produce embarassment of the fifth nerve than of the upper ones, although actual bony impingement upon the nerve is not common.

The sacro-iliac joints are also true joints, but permit very little motion of the bones. The sacrum is wedged between the innominates as the keystone of an arch. Normally, the lateral spinous processes of the fifth lumbar are separate from the iliac crests and so do not articulate with them.

I have divided the common causes of low back-pain into the following groups: arthritis, poor posture, post-traumatic causes, pregnancy, congenital defects, destructive bony lesions, spinal cord lesions.

Arthritis

Of the many types of arthritis, the atrophic and hypertrophic types are the ones which most commonly cause pain in the back. In both these types the pain is most likely caused by peri-articular inflammation of the inter-vertebral facets just as in arthritis of the larger joints. It is doubtful if actual nerve pressure exists in these cases where spurs are present, because painless backs with large spurs are much more numerous than painful ones.

Atrophic arthritis occurs more commonly in people under 40, and does not show on x-ray except for some degree of bone atrophy. It is a soft-tissue lesion more than a bony one and causes a synovitis and peri-articular inflammation and swelling of the joint capsule. The patient will have pain in the back and complain of stiffness and limitation of motion. Examination will reveal some muscle spasm, tenderness and limitation of motion. The x-ray cannot be relied upon in this type.

In the hypertrophic type, one usually finds spurs, some large and some small. It is doubtful how much pressure these spurs cause upon the nerves, because many patients with enormous spurs have never had symptoms. The pain is most likely due to inflammation of the lateral inter-vetebral joints, just as in the knee or elbow. The pain may be only in the back, a lumbago, or it may radiate down to the foot along the sciatic nerve. This is a true referred pain. Only too often is a sciatica treated locally without any regard to the lumbar spine. The lateral facets, too, should be given more attention in the doubtful cases, as it is here in the true joints that the pathological process will be found. The soft tissue swelling in the capsular ligaments will not show in the x-ray but small spurs will. They can be found by taking a profile view of them with the x-ray. I believe the small spurs are more important than the large ones in causing pain, and hence are of greater significance. The x-ray should not be relied upon too much if negative, especially in atrophic arthritis. Briefly, then, atrophic arthritis is characterized by being more painful and disabling than the hypertrophic; there is more limitation of motion and more frequent anklyosis than in the hypertrophic type. The bones show porosis or atrophy, while the hypertrophic is more dense. Cartilage destruction, as of the inter-vertebral disc, is more common in the atrophic. Spurs and marginal lipping are characteristic of the hypertrophic. The atrophic usually occurs in people under 40, the hypertrophic over 40, although mixed types in the same individual are not uncommon. The treatment of both types consists of local and systemic treatment. An inflamed joint needs rest, regardless of

its location. The lower spine can be put at partial rest by putting the patient to bed on a firm flat mattress. If necessary, a plaster shell can be made. After the acute symptoms have subsided, a metal brace or canvas reënforced corset may be sufficient. Physiotherapy, such as the infra-red lamp and massage, always helps. Foci of infection are more important in the atrophic than the hypertrophic type, but as there are mixed types present, the foci should be removed. Good bowel elimination is important. The patient should be put into a good general condition with iron for anemia, a balanced diet, and plenty of vitamins. Scores of other methods could be mentioned, such as foreign protein and vaccine injections, sulphur injections, and artificial fever therapy. Some of these are advertised by interested drug companies, and others are still **sub judice** and experimental. At present one would do well to follow the advice of the American Medical Association's Committee on Arthritis which advises the general measures already mentioned.

Posture

In examining a patient with backache, the first thing to do is to look at the patient as a whole, instead of seeking at once a specific cause for the ailment. By analyzing the posture and body mechanics, alone, one can frequently obtain important information relating to the back-pain. Goldthwait long ago called our attention to faulty posture and to the resulting disturbances in the spine, and to the muscular, nervous, and circulatory systems. A faulty posture may cause functional disturbances in many of the organs as well as in the spine. Organically, nothing wrong is frequently found—yet functionally much may be desired.

It is this type of case which is so confusing to physicians who forget the factor of posture. Perhaps the most common type of poor posture is the one in which the shoulders are round and relaxed with head forward, the lumbar spine is in hyperextension, the lower abdomen prominent, and the musculature relaxed. In such a poor physiological position, strain upon many joints and ligaments is present. Upon examination, one may find tenderness over any one or several groups of ligaments. Various tests for sacro-iliac joint strain and sciatic nerve involvement may even be positive. Misinterpretation of the actual trouble therefore, can be easy if the posture is not kept in mind.

Faulty posture causes some of the intervertebral facets to be in a position of either complete flexion or complete extension, neither of which is normal and both of which put strain on the capsular ligaments. A sudden movement of the trunk, if not protected by the musculature, will cause injury to the joint, as it has no margin of safety. When innumerable of these minor injuries occur, a chronic state of fatigue to the back often results. Referred pains may occur secondarily, due to the inflammation and swelling caused by injury to the joint. Sciatica can also be explained upon this basis.

Poor posture is very commonly accompanied by flat feet or ankle valgus. One foot may be worse than the other. In women, it is common to find a moderate degree of claw toes, corns, and calluses over the fallen metatarsal arch. By favoring one foot, or trying to avoid stepping on painful areas, the patient often develops a backache because of muscle fatigue and ligamentous strain.

People with one lower extremity shorter than the other, as following fracture or in the infantile paralysis victims, quite frequently complain of pains in the lumbo-sacral joints. Here the pelvis is tipped to compensate for the shortness, which results in mal-alignment of the joint structures and subsequent strain. The cure obviously is to lengthen the shorter extremity either by raising the heel or by a bone lengthening procedure.

The treatment of back-pain due to faulty posture consists of correction of the posture by back-and-abdominal exercises and by wearing a light brace or reënforced corset until the habit of the new posture is acquired. To be very successful, these exercises should be done under supervision; at least, to begin with. At home the tendency is for the patient to do them incorrectly and only half-heartedly —consequently, the results also will be unsatisfactory. The treatment of injured joints consists of rest during the acute stages, preferably in bed, and then keeping the joints in the normal position where they have the margin of safety. The principle is the same as for any other injured joint. The brace is worn for two purposes—to give support and to hold the trunk in the proper position until the muscles have become strong enough to do it themselves. The brace is removed at

certain times during the day to permit the performance of the exercises, and is not worn at night. Visceroptosis which is often associated with these poor postures also may be a contributing factor and should be treated at the same time.

Traumatic and Post Traumatic

The controversy still rages as to what takes place when a person has a minor injury to the sacro-iliac joint. It has been conceded that in the vast majority of cases, the injury is to the ligamentous apparatus, although, rarely, dislocations do occur. A few years ago Leriche and Policard of France maintained that sprains were not due to tears of ligaments, but were, rather, injuries to the nerve endings within the ligament. This theory has, however, not been generally accepted. Many of these become chronic or recurrent and in any case of low back-pain, one is confronted with a possible sacro-iliac sprain. The diagnosis is made from the history, local tenderness, limitation of flexion of the lumbar spine, and a positive Gaenslen test, straight leg raising test or the Laquere test. X-ray shows nothing as a rule.

Likewise, one may find the after effects of other injuries as to the inter-vertebral ligaments, the lumbo-sacral ligaments, the ilio-lumbar ligaments, most of which are diagnosed by the local tenderness and limitation of motion. Most of these chronic backs due to ligamentous injury have already been put through the rest and physiotherapy régimes. They should then be manipulated as recommended by the English—especially Bankart, who cures most of them by this method. The patient is given a spinal or ether anesthetic to obtain complete muscular relaxation, after which the lumbar spine is forcibly but slowly put through its normal ranges of motion. This includes flexion, extension, and twisting to both sides. The hips are also flexed forcefully and slowly. A double hip spica cast may then be applied and left on for two weeks or bed rest alone may be tried. Heat and massage to the back are given followed by crutches in a few days, and then a canvas corset. Whether the manipulation breaks up the adhesions in the ligamentous muscular structure as claimed is not certain, but it is certain that many cures are obtained with the method, and hence, should be tried in selected cases.

A not very common lesion sometimes present is a calcified ilio-lumbar ligament, presumably due to an old injury. This may be sometimes felt, and can usually be seen by x-ray.

Not so common, but also, not so rare, is a narrow inter-vertebral disc between the fifth lumbar and the first sacral, due to injury. The annular ligament of the fibro cartilage may have ruptured and permitted a herniation outward, or the center of the disc known as the nucleus pulposus may have herniated either into the vertebral body or elsewhere. Such a narrowing of the disc may occur anywhere, but it is most significant when the location is between the fifth lumbar and the first sacral, because in this location it is more apt to cause symptoms. The largest trunk of the sciatic nerve is the one which passes into the fifth lumbar foramen, and normally this foramen is the smallest of all those in the lumbar spine. A narrowing of the fifth lumbar disc also narrows this foramen and sometimes causes irritation to this branch of the sciatic.

Diagnosis can be made by x-ray, and the treatment is conservative, with cast immobilization or with operative fusion.

One group of joints already referred to which are only seldom examined carefully, and infrequently considered as having been traumatized are the lateral inter-vertebral joints or facets. These are true joints with articular surfaces, synovial membranes, and capsular ligaments. The function of these joints is to permit motion in the spine and to act as stabilizers, but not to carry weight. Each joint permits only a fraction of an inch of motion—yet many of them together permit an appreciable amount. Leverage determines to a large degree the amount of force transmitted to the capsules of these joints, being progressively less toward the head and progressively greater toward the sacrum, the greatest being to the lumbo-sacral joints. The musculature usually prevents damage to the joints, but occasionally a sudden forcible motion is too great or too quick for the muscles. It is then that the capsules of these joints receive the burden of force, and frequently they are injured by having some of their fibres rupture. One such injury may not be sufficiently great to disable the person or to cause symptoms, but repeated injuries only too often do. The pain and stiffness come on gradually and are accompanied by muscle spasm. This in turn also becomes painful and the patient then comes to a physician for help. The diagnosis

is not easy because the joint is not palpable. One has to depend on the muscle spasm, the limitation of motion, and by eliminating the other possible pathology. X-rays do not show the synovitis of the joint and the swelling and inflammation of the capsular ligament. In my mind, this clinical entity is more frequently missed than any other one cause of backache. As in other joints which are subject to great strains and stresses, hypertrophic spurs are commonly found and when present, may also impinge one upon the other and cause pain.

The proper time to treat this type of sprain is early, before secondary changes have occured. Only by early treatment can these secondary changes be prevented. It was mentioned above that the principles of treatment of these facets is the same as for the treatment of large joints. The patient should be rested in bed upon a firm mattress and with some lumbar support to retain the normal lumbar curve. After the muscle spasm and tenderness disappear, some support should be provided—either a steel brace or a reinforced canvas corset. Here, too, the patient should be taught how to carry himself in a position of good posture—a position in which the body weight is not being carried by the facets. Occasionally, a painful back may be due to a lesion first recognized by Schmorl. This is a ruptured nucleus pulposus into the cancellous bone of the vertebral body and can be seen on the x-ray. Fractures of the vertebrae are not often missed, excepting only when a slight compression fracture is present. X-rays are, of course, indispensable for diagnosis. Sometimes an old fracture causing pain will require operative fusion.

Another lesion which is not uncommon following trauma but which may be missed, is telescoping of one or more inter-articular vertebral facets. A real dislocation is present and may be single or multiple, uni-lateral or bi-lateral. Such lesions may or may not be painful, depending upon how kind nature is subsequently. If the joint becomes fixed there will be little if any pain; if even a small amount of motion remains a disabling pain results and becomes the most prominent part of the picture. A careful examination of the x-ray taken of these joints will usually make the diagnosis.

Pregnancy

There are very few women who do not complain of low back-pain following childbirth. The reason for this is two-fold—first, the ligaments of the entire pelvic region are physiologically relaxed during pregnancy. This makes for weakness and instability and the patient becomes more susceptable to injury. Secondly, the posture is greatly changed. On account of the weight of the uterus, the women assumes a fat man's posture where the lumbar spine is hyper-extended and new strains put upon the already strained ligaments. Also, the posterior spinous processes may impinge upon one another. After childbirth the entire process changes—both the posture and the ligamentous apparatus. Some women adapt themselves to these without difficulty—others fail to do this completely, and continue to have pain in the lower back. Such women will have tenderness over the lumbo-sacral ligaments most frequently. Motion of the spine will be somewhat painful and the posture may still be one of a hyper-extended lumbar spine. The treatment is to correct the posture, give her a temporary canvas support and a short course of physiotherapy— preferably radiant heat and massage.

Congenital Defects

Someone slightly exaggerated when he said, "There is no such thing as a normal fifth lumbar vertebra." It is common knowledge, however, that many spines have congenital defects which are too often diagnosed as the cause for a backache. The fifth lumbar vertebra is sometimes fused completely or incompletely to the wings of the ilium, leaving only four true lumbar vertebra. Sometimes there is a sixth lumbar vertebra or only an apparent sixth when the twelfth dorsal is without ribs. The transverse processes may also rub or impinge upon one another, either congenitally or when the lumbar spine is hyper-extended because of poor posture. Another anomaly is the lack of fusion between the two halves of the neural arch resulting in a spine bifida occulta which may be seen externally as a dimple in the skin with or without a tuft of hair.

The epiphyses of the spinous processes may remain separate and give rise to a separate bone. In the first lumbar this has been mistakenly called a rudimentary rib.

The sacrum is normally at a 120 degree angle with the lumbar spine but sometimes are seen cases where the angle approaches a right angle. There is then a possibility of stress and strain which might cause symptoms.

When the laminae fail to fuse, thus separat-

ing the vertebra into posterior and anterior halves, we may see what is known as a spondylolisthesis, a slipping forward of the body of the fourth or fifth lumbar vertebra usually, upon the distal segment. Such a defect may be present for many years and never result in spondylolisthesis as in people with sedentary occupations. When it does occur following a trauma or heavy lifting, pain becomes a prominent symptom, and one may be able to find a step-off depression in the back. A lateral roentgenogram is indispensable to diagnose this condition. It is also possible to have a spondylolisthesis as a result of a fracture to both laminae or following a destructive disease of the region. Conservative treatment by support may be succesful in people with light occupations but in laborers, spinal fusion is usually necessary.

What part do these congenital malformations have in causing backache? Usually they are without symptoms, but being a structural weakness, they are subject to injury more frequently than the normal spine. When such a spine is injured, treatment is more prolonged. A correct posture is very important in these cases.

Destructive Lesions

Destructive lesions cannot be considered in detail here but should be kept in mind. Tuberculosis of the vertebrae is most common and can be recognized with the x-ray. Tuberculosis of the vertebrae is most common in the lower back and tuberculosis of the sacro-iliac joint next.

Osteomyelitis is not as rare as wer formerly thought and should be easily recognized from the draining sinuses and the x-ray. Both forms are seen of the vertebrae and the sacro-iliac joints as well as of the ilium. Other organisms than the staphylococcus can also be responsible, such as malta fever or typhoid.

Syphilis is not common, but is also a possibility. The same is true of Paget's disease, which should not be missed if roentgenograms are taken.

Severe and intractable pain of the lower spine can easily be caused by primary or secondary malignancy. The lumbar spine and pelvic bones are common locations for secondary carcinoma, and are frequently seen in carcinoma of the prostate and cervix. Primary osteogenic sarcoma, although rarely found in the lower spine, can also occur.

Spinal Cord Lesions

Spinal cord lesions often masquerade as a severe sacro-iliac sprain. Before bladder and bowel symptoms occur and sensatory changes a spinal cord tumor can be very difficult to diagnose. A severe low back-pain which has refused to respond to immobilization should be investigated further. I once had a patient who had a progressively-worse sacro-iliac pain and who finally developed signs of spinal cord tumor. Upon operation the tumor was not found but only an arachnoiditis, the adhesions of which caused constriction of the cord.

Conclusions

This brief consideration of the more common causes of low back pain demonstrates the breadth of the field which one must consider in solving some of the difficult cases. One must be a good detective and follow every clue in the diagnosis; the difficult cases may need studies of the blood, tuberculin tests, x-rays, metabolism tests, and any others that may be suggestive.

A summary of the subject may be made as follows:

1. Low back-pain is a symptom and not a disease; it should not be treated as the basic condition.

2. A diagnosis of sprain or rheumatism can be made only with evidence of these conditions.

3. Subluxation of the sacro-iliac joint is not common—ligamentous injury surrounding the joint is.

4. X-rays are important but even more important is the proper interpretation of the findings such as of the anomalies.

5. Foci of infection frequently makes an injury resistant to treatment.

6. Poor posture causes ligamentous strain and must be corrected coincidentally with the other pathological conditions.

7. Conservative treatment, patience and encouragement will cure most of the cases. Manipulation under anesthesia is necessary in some, and operative fixation only seldom.

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THE MEDICAL ASSOCIATION OF MONTANA

The Medical Association of Montana has been in existence for fifty-seven years. It is composed of fourteen societies, and its members constitute seventy-six per cent of the physicians practicing within the state.

Montana has a population of about 550,000 people, about half of whom reside in its cities, none of which is very large. As in other states, the physicians have congregated in the larger cities, many of them after having tried to make a living in the smaller communities, or in the hope of specializing. There are whole counties which possess only one doctor, and often the financial position of that doctor is very precarious. But he is usually patient enough to realize that he may possibly find no better location; and he remains to pray that the next crop will make it possible for some of his debtors to liquidate accounts which will ease the strain on his mind and his purse.

Most of the component societies are active in behalf of the membership. Their meetings are fairly regular, and the attendance is gratifying to the officers. This year, concerted efforts are to be made to establish post-graduate courses.

One society has a tumor clinic which meets regularly. Several others have annual or semi-annual clinical sessions. Whenever any physician of prominence proposes to pass through Montana, the officers make it a point to meet him at some place in his itinerary, and arrange a meeting. On one occasion, thirty-one members traveled over five thousand miles. Montana has magnificent distances as well as other things. E. G. B.

WORKOMETER

Osler said work was the master word in medicine. Tom Sawyer defined it as that which a body is obliged to do. Robert Louis Stevenson wrote that an "industrious one" sows hurry and reaps indigestion and comes among people swiftly and bitterly to discharge some temper before he returns to work. There you are; three different postulates, concepts of a lofty ambition, indolence and irritability. Some men work too strenuously no doubt while others do not sufficiently exert themselves.

There are thermometers, sphygmomanometers, metabolism testers and quite accurate rules for determining the intelligence quotient but we have no machine by means of which we may estimate the all around capacity of an individual to do things. There should be a more precise way of determining what stuff a man is made of than we now have. It would eliminate overtaxation on the one hand and cobweb accumulation on the other. Whoever invents a simple "workometer" will find eager demand in every employment bureau. It would be wonderful if each one could be measured by some such standard and labeled according to his true worth, before he is put to work.

A. E. H.

HONOR TO WHOM HONOR IS DUE

In these days of disturbance and turmoil, it is the duty of the medical profession to be above reproach. This should be especially true of the leaders of the profession. In these days of travel by air, as well as by auto, many an accident occurs in what may seem to be an out of the way place, but possibly even there the victim may find near at hand a well-equipped hospital with an up-to-date staff. The traveler may be of low or of high social or financial rating, or he may be a native of our land or from some foreign country. He, or his friends, may desire consultation and request the presence of some physician whose name is widely known. This has occurred and is not unnatural. Most consultants are aware of the courtesies of their profession. Perhaps it is the hunger of the Press for news that occasionally results in daily bulletins reporting the almost immediate and rapid improvement of the victim upon the arrival of the consultant, but such bulletins could not go out without his knowledge. By those who know, such reports are smiled upon as the result of a desire for free advertising, for they realize that the real work in the saving of a life had been done before the arrival of the consultant. It is only by practicing the common courtesies in our contact with each other that physicians may uphold the dignity and worth of our profession.

Fra Elbertus once said, in effect, "Do not laugh at the country boy, for one of these days he may be putting a mask over your face"—which was not bad advice, and may be extended to include the country doctor, who not infrequently is a graduate of at least as good a professional school as that of the consultant, and also might be able to present a better mortality rate table, case for case, if he cared to publish it.

T. F. R.

STUDENT CARE

Vacation days are over. Children are returning to school. Some are going for the first time.

Have we as physicians done our duty in anticipation of the event?

The children of those who are unable to pay for medical supervision and care have or will receive them from physicians or agencies provided for by law. There are many who may be designated as less fortunate because in their economic security parents have become blindly indifferent to other more specific needs of their offspring.

It is the problem of taking care of the well-to-do and those in moderate circumstances that rests with the private practitioner and if he does not find a satisfactory solution, this portion too will be taken from him in the course of time.

A. E. H.

MODERN MEDICINE

Among the most noteworthy recent advances in medicine are the devices which enable us to examine large numbers of apparently healthy persons in whose bodies we often detect defects or actual disease long before they are sufficiently noticeable to the individual to bring him to the physician for examination. When detected, at this time, many defects may be corrected or the disease treated successfully, thus preventing long periods of unpleasantness, invalidism, and even death. The audiometer is a good example, since by the use of this instrument one rapidly screens out those who need more detailed examinations by their physicians. In fact, by the use of this instrument, 40 to 50 persons may be examined in a single hour, whereas in times past many hours would be required to examine each one individually. The Harrington vision tester is another example. Neither of these instruments determines the nature of the defects, but both determine with accuracy which persons have defects so that detailed examination can be limited only to those who are in need. Many persons with defective hearing or vision are not aware of it. They may go through life without ever having it detected. There is good evidence that these defects, when left undetected, in some cases lead to an inferiority complex and from here a criminal record may result.

If these devices are not used, the defect must become so noticeable as to call the attention of the individual or his associates to the real trouble. The case of former President Theodore Roosevelt is a striking example. In his autobiography, he tells of detecting his own vision defect at the age of nine years. While walking with other boys, he noticed that they were reading signs at a distance which he could not even see. Reporting this to his father, a physician was consulted and an extremely serious defect was detected which had handicapped him greatly up to that time. Had it not been detected and corrected in all probability he never would have become the great statesman that he was.

Another recent development is that of using the x-ray film to screen out those persons who have abnormal conditions of the chest, particularly the heart and lungs. The fact is well established

that primary carcinoma of the lungs and bronchi usually has reached the inoperable stage before symptoms appear as pointed out by Hamman of Baltimore, (Am. Rev. Tuberc. 28:711, 1933). X-ray films of the chests of these persons while they are still apparently normal, that is in the pre-symptom stage, will often reveal an abnormal shadow. While this does not diagnose the condition, clinical examination including bronchoscopy, often will at a time when treatment may be successfully administered, particularly by modern lung surgery.

Jackson (Bronchoscopy, Esophagoscopy and Gastroscopy, W. B. Saunders Co., Philadelphia, 1934) of Philadelphia has even expressed a desire for routine x-ray examinations of all children pointing out that not infrequently foreign bodies not yet causing significant symptoms may be detected and removed before they have done serious damage. If allowed to remain, bronchiectasis and lung abscess in chronic form may later bring the individual to the physician, after which the disease can be treated successfully only with great difficulty or not at all.

Pulmonary tuberculosis in chronic form usually exists over a period of two or three years in sufficient extent as to cast a definite x-ray shadow before symptoms appear. When the individual comes to the physician because of illness, it has been found that approximately 80 per cent already have the disease in moderately or far advanced stage. Thus, it is obvious that if we are to do our greatest good we must examine large numbers of apparently healthy persons.

This increases the volume of work to such an extent that it could never be done by our old methods. Necessity for a rapid method of screening out those persons who have developed such lesions in the chest has given us the device. An x-ray camera making with ease 150 chest exposures per hour on x-ray film in rolls is now available. After exposure, the rolls are developed quickly and uniformly, just as kodak film rolls are; special reading devices are available, which also materially reduce the time required in the examination. It is now conceded by physicians everywhere, that this is the only method satisfactory for doing the large volume of x-ray work which is already being demanded.

A few physicians have erroneously looked upon these rapid methods of detecting defects and early disease conditions in apparently normal persons as an attempt to socialize medicine. These methods do not take from the physician his practice but rather increase his work to insure him a much more pleasant type of work than he has been accustomed to in the past, since the cases are referred to him for treatment. Certainly no one would fail to promote such procedures for the school children of this country. The screening method results in great interest in health, not only on the part of children and others who are found to have defects and early disease but also among those who are found to be free from them as well as the parents and other associates. Moreover, large numbers of those needing medical attention are referred to their physicians, who on their own volition would never have consulted them. No matter how we look upon rapid methods of examining the apparently healthy, they are with us; they are a part of modern medicine.

J. A. M.

HENRY HERBERT HEALY

Dr. H. H. Healy was born in Drayton, Ontario, December 30th, 1869 and passed away at his home in Grand Forks, North Dakota, September 2, 1935. His father came to Dakota Territory in 1878 and homesteaded near the Red River in the neighborhood of what is now the city of Drayton, N. Dak. The family came in the following year and Herb, a lad of ten had to take his place and do his bit as a productive unit in the new settlement. He received his preliminary education in home schools and at the family fireside. He had academic training at Hamline and Medical training at the University of Minnesota and at Rush Medical College, Chicago, where he was graduated in 1892. At intervals throughout his life he did much graduate work which kept him fully abreast of advanced medical thought. He began practice in Grand Forks with the firm of Wheeler and Logan and in a short time moved to Michigan City, N. Dak. where he remained until 1901. He then came back to Grand Forks where he remained the rest of his life.

Dr. Healy was a many sided man. He came from a long line of distinguished pioneers, and inherited in no small degree their spirit of independence, courage, integrity, progress and adventure. These traits became dominant factors in his life and character and in shaping his career. In 1901 he was appointed State Superintendent of Health and did pioneer work in preventive medicine. He envisaged the role of infection and was the first to advocate and recommend the erection of Sanatoria for the isolation, care and treatment of the tuberculous in the state. He contended that the health of children in rural districts should be safeguarded equally with those

of the city and trained and supervised the first whole-time rural school nurse in the state, if not in the nation. He early recognized the advantages of group practice and organized the Healy, Law and Woutat Clinic which has since been enlarged. He took an active interest in organized medicine, and was a charter member and first secretary of the original Grand Forks Medical Society. He early became identified with the State Medical Association and was elected in 1910 as its President; and became a Fellow of the American College of Surgeons shortly after the creation of that organization. When the United States entered the World War he was among the first to volunteer. He was accepted and served his country with distinction at home and abroad. He received his discharge February 28th, 1919, with the rank of Major.

He was a lover of the out-of-doors, and his vacations were spent in secluded spots where nature was fresh and unspoiled. He loved the woods, the streams, the lakes and the shady dells and felt joy in the music of the surf as it beats against rugged coast lines, as well as in rippling brooks as they dance and gurgle over pebbled beds. He received not only personal inspiration and strength for his day's work from these excursions but the emotions which they generated were reflected in a practical way when as Park Commissioner he did so much to save the fine natural forest growth that fringes the River, and in other ways to encourage and foster outside beauty in his home city.

Dr. Healy was a man of action rather than of ready speech, but his words were well chosen and weighted with wisdom. This applied to decisions in the consultation room, opinions on civic affairs, matters of business or counsel and advice to the younger physicians, or older ones for that matter, on points of professional ethics and conduct. His criticisms of unsatisfactory conditions may have seemed a trifle harsh at times, but they were constructive in aim and given in the spirit of helpfulness without rancor or ill-will. Few people knew of his acts of kindness, of the help he gave in times of stress, of the time and substance he bestowed on those in want, and of the helping hand he so often held out to those in need of a lift; yet these were his daily ministration.

Dr. Healy is survived by his wife and four daughters and to them he leaves a rich legacy of memory's brightest blossoms. These will remain fresh, fair and fragrant while life endures. Then there are the public services he rendered, the friendships he made, the ideals he championed and the life he lived. These bear fruit that ripen with the years and become the heritage of us all.

The insidious malady that claimed him gnawed steadily at his vitals and well he knew what the final outcome would be; but like the good soldier that he was he faced the future with fortitude. As the end neared he longed for rest, and softly whispered as did that other weary yet hopeful soul: "Glad did I live and gladly die, and I laid me down with a will." Thus we note the passing of another of our number and what higher tribute can we pay than to say that he will be missed?

James Grassick, M.D.

ANNOUNCEMENTS

DOCTOR SCAMMON HONORED

The friends of Dr. R. E. Scammon are pleased to know of his promotion from the Deanship of Medical Sciences to a Distinguished Service Professorship. This will make it possible for him to devote his entire time to those subjects in which he is especially trained and in which he is so deeply interested. Prior to 1930, Dr. Scammon was looked upon as one of the finest teachers who had ever been on the Faculty of the School of Medicine at the University of Minnesota. His lectures, demonstrations, and laboratory exercises were so practical and his presentations so clear and adequate that graduates of the school looked back upon his course as one of the best they had ever taken in any department and entering medical students looked forward to this course with much pleasure. In addition to teaching, he had a great influence in the Graduate School; in fact, there were times when as many as thirty graduate students were working on individual problems under his direction. He inspired them to carry on at all times and particularly when discouragements arose. Thus, many students received advanced degrees because of his encouragement and help.



Dr. R. E. Scammon

In addition to his accepted position of leadership in embryology Dr. Scammon is the master of many other subjects, such as history and

mathematics; indeed, he is an expert in biometry. His investigations of life insurance companies and their various policies, in an attempt to find that best suited for the faculty of the University, were so thorough that he was soon looked upon as an authority in this field.

When Dr. Scammon accepted the Deanship at the University of Chicago, his absence was keenly felt at Minnesota. His administrative duties prevented him from carrying on with the kind of work which he had previously done so uniquely. Following his return to the University of Minnesota in 1931 the press of administrative work, the almost constant holding of conferences and meeting with committees left him with very little time to advance science. When the Board of Regents in 1935 created a position of such high rank for Dr. Scammon they materially advanced the best interests of the University. He will now have the freedom of time and the necessary facilities of the University to pursue without interruption investigative work in which he is most interested and from which we may expect valuable contributions.

J. A. M.

DOCTOR DIEHL APPOINTED DEAN OF MEDICAL SCIENCES

Many times in the past, Dr. Harold S. Diehl has demonstrated a most unusual ability in administrative work. He was Director of the Northern Division of the American Red Cross in Poland, immediately following the World War. Soon after he returned to the University of Minnesota, Dr. Diehl was made Director of the Students' Health Service and Chief of the Department of Preventive Medicine and Public Health. No one who has worked with him intimately or who has carefully observed his work can fail to see how smoothly and satisfactorily these departments have been operated. Moreover, there has been constant improvement through new developments. He has held such positions as President of the American Student Health Association; Chairman of the Health Service Section of the National Conference on College Hygiene; and at present is Secretary-Treasurer of the American Student Health Association.



Dr. H. S. Diehl

Not all of Dr. Diehl's previous experience has been in administrative work. He is highly trained in the fundamentals of medicine, as well as its clinical and preventive phases. Graduating from Gettysburg College in 1912, he taught high school mathematics in Fulton, New York, for two years. After entering the School of Medicine of the University of Minnesota, he was for two years part-time assistant in bacteriology and pathology. In 1920 he held a fellowship in medicine and in 1921 was pathologist at the University Hospital. Since 1921, he has taught various phases of preventive medicine and public health, both in the Medical and Graduate School.

Dr. Diehl has manifested much interest in research, which has resulted in a large number of contributions, which have been published in the Journal of the American Medical Association, Archives of Internal Medicine, Journal of Industrial Hygiene, Journal of the American Public Health Association, and others. Moreover, he has contributed a valuable chapter on the Periodic Health Examination, to the Practitioner's Library, edited by Dr. George Blumer of Yale University. A complete volume entitled, "Healthful Living," and edited by Dr. Morris Fishbein is about to be published by the McGraw-Hill Company.

On the basis of his numerous accomplishments, his Alma Mater, Gettysburg College, granted him the honorary degree of Doctor of Science at the regular commencement exercises in 1935.

The recent appointment of the Board of Regents of Dr. Diehl to the Deanship of Medical Sciences culminates a distinguished career. It is the highest recognition of success by those with whom and for whom he has worked. He has the wholehearted support of the Faculty of the Medical School and the medical profession throughout the State of Minnesota.

J. A. M.

SOCIETIES

THE SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Annual Meeting, Austin, Minn.

August 25 & 26, 1935

The Southern Minnesota Medical Association conducted its 1935 meeting at Austin, on August 25 and 26, in the auditorium of the Austin High School. Registration of members was scheduled for Monday, August 26, but the preliminary session began on Sunday, with a golf match on that afternoon at the Austin Country Club, followed by a buffet lunch at 6:00 p.m.

The evening meeting was open to the general public, many of whom attended. It was featured by an address delivered by Dr. William A. O'Brien, Saint Paul, associate professor of preventive medicine and public health and pathology in the University of Minnesota Medical School.

On Monday, the Mower County Medical Society presented a medical clinic. Dr. G. A. Earl's (St. Paul) paper on "Duodenal Stasis" was offered; followed by the paper of Dr. P. W. Brown, Rochester, on "The Problem of Diet in Constipation and Diarrhea." Dr. T. L. Birnberg, St. Paul, was represented by his paper, "The Early Diagnosis and Treatment of Intussusception." A paper on "Acute Appendicitis" was the work of Dr. James J. Morrow, of Austin. Discussion of these papers was opened by Dr. Mandred W. Comfort, of Rochester.

At the session held in the high school building, Dr. R. D. Mussey, Rochester, opened the program with his work, "Prenatal Care." He was followed by Dr. B. J. Gallagher, Waseca, who spoke on "Obstetrics in General Practice." Dr. G. A. Dahl, Mankato, presented his paper, "Stillbirth," at this symposium on obstetrics; and the last paper to be read was that of Dr. J. A. Urner, Minneapolis, on "Post-partum Hemorrhage." Discussion at this symposium was to have been opened by Dr. R. S. Mitchell, Grand Meadow.

In the high school building there was held a symposium on heart disease, beginning at 10:45 a.m. on Monday morning. It was opened by Dr. S. A. Weisman, of Minneapolis, with his paper on "Auricular Fibrillation Treated with Quinidine." "Chronic Myocardial Disease," the work of Dr. H. J. Lloyd, Mankato, was the next offering, followed by "Discussion of Some Lesser Known Types of Heart Disease" by Dr. A. R. Barnes, Rochester. Dr. M. S. Mayland, Faribault, spoke on "Observations on Heart Disease in Forty-five Years of Practice." Discussion of this symposium was opened by Dr. B. J. Cronwell, Austin.

At 10:45 a.m. on Monday, there was held a symposium on urology, inaugurated by the paper by Dr. John Emmett, Rochester, on "Prostatic Massage or Resection?" The next presentation was that of Dr. A. E. Benjamin, Minneapolis, on "A Special Operative Technique in Certain Types of Prostatic Disease." Dr. T. H. Sweetser, Minneapolis, was represented by his paper, "Hydronephrosis—Its Diagnosis and Treatment," and he was followed by Dr. J. T. Priestley, Rochester, who spoke upon "Renal and Ureteral Lithiasis." Discussion at this session was opened by Dr. W. F. Braasch, Rochester.

Monday afternoon, the session was opened by the "Case Reports" report of the Committee on Case Report Awards. Dr. A. J. Chesley, Saint Paul, then spoke on "State Public Health Administrative Program Under Proposed Federal Subsidy," followed by Dr. R. N. Andrews, Mankato, who delivered his paper on "Ovulation Pains." E. C. Kendall, Ph.D., biochemist of the Mayo Clinic, Rochester, described "The Function of the Adrenal Cortical Hormone," and Dr. Gilbert G. Cottam, Sioux Falls, S. D., spoke on "Diseases of the Thyroid Gland." Dr. D. E. Morehead, Owatonna, offered a paper on "The Role of the Thyroid in Endocrine Disturbances"; and Dr. J. G. Love, Rochester, spoke on "Diseases of the Pituitary Gland Amenable to Surgery." The final speaker was Dr. E. H. Rynearson, Rochester, who evaluated "The Present Status of Endocrinology."

There was a banquet at 6:30 p. m. on Monday, at which Dr. S. A. Slater, Worthington, retiring president of the association, delivered his "Presidential Address." Dr. Walter C. Alvarez, Rochester, spoke on "The Doctor's Position in the Community." Dr. Alvarez spoke in place of Dr. Hugh Cabot, Rochester, who was unable to attend the meeting.

The annual medal for general excellence in presentation was given to Dr. T. H. Sweetser, Minneapolis, for his paper, "Hydronephrosis—Its Diagnosis and Treatment." Approximately 150 physicians were in attendance during the two-day sessions.

Dr. B. J. Gallagher, Waseca, was elected president for 1935-1936; vice president, Dr. G. L. Joyce, Stewartville; and Dr. H. C. Habein, Rochester, was re-elected secretary-treasurer.

THE INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The Inter-State Post Graduate Medical Association of North America, whose president this year is Dr. Charles H. Mayo, of Rochester, Minn., will hold its international assembly in Detroit, Mich., the week beginning October 14, 1935.

This great medical association, whose meetings have always attracted the close attention of physicians in all parts of the country, has scheduled a pre-assembly clinic in Detroit hospitals for Saturday, October 12, and a post-assembly clinic for Saturday, October 19, likewise in Detroit hospitals.

The program this year has been fashioned along the lines of clinical and didactic medicine; and is all-inclusive, embracing general medicine, surgery, and even the specialties of modern medical practice.

The Wayne County Medical Society, which includes the city of Detroit, will join with the Michigan State Medical Society, the Detroit Convention and Tourist Bureau, and the Detroit Chamber of Commerce, in playing host to all members and visitors at the assembly, insuring a valuable and enjoyable session throughout the entire period.

Dr. Charles H. Mayo is scheduled to address the assembly on Thursday afternoon, October 17, according to the managing director of the assembly, Dr. William B. Peck, of Freeport, Illinois.

A registration fee of $5.00 will admit each member of the medical profession in good standing. Requests for details should be sent to Dr. Peck at Freeport, Illinois.

NEWS ITEMS

Dr. E. W. Emanuel, Milnor, N. D., is confined to his home, following the result of an auto accident.

Dr. J. A. Cowan, formerly of Flaxton, has moved to Kenmare, N. D., where he will be associated with Dr. D. J. Halliday.

Dr. A. W. Adson, Rochester, has returned from London where he was on the program at the International Neurological Congress.

Minnesota has been selected as one of nineteen states for a house-to-house canvass in the health survey of 750,000 families this winter.

Dr. W. E. Hodgkin, formerly at Portland, Oregon, has moved to Kallispell, Montana, where he has opened offices for general practice.

Dr. R. T. O'Neill, formerly of Choteau, Mont., has moved to Minot, N. D., and will be associated with Dr. J. L. Devine of that city.

Dr. W. E. Leonard, a practicing physician in Minneapolis for over 50 years, passed away last month, at the advanced age of 80 years.

Dr. G. H. Holt,, Jamestown, N. D., has the reputation of being one of the best civilian air pilots in the Northwest. He flies a Curtiss Robin plane.

Monthly meetings of the Seventh District Medical Society were resumed at Sioux Falls this month, with Dr. C. L. Coslet, being the principal speaker.

Dr. C. T. McEnaney, Owatonna, has been named physician and surgeon for the Minnesota state public school to succeed Dr. A. B. Stewart who retired.

The only bird hospital in the United States is at Portland, Oregon. It is under the supervision of a woman who has administered to ailing birds from all parts of the country.

Dr. Neil McLean, Devils Lake, N. D., died last month at a Livingston, Montana hospital, on his way home from a trip to the Yellowstone Park, the result of a paralytic stroke.

Dr. A. C. Broaders, formerly of the Mayo Clinic, Rochester, is now on the staff of the Medical College at Richmond, Va., as head of the department of surgical pathology.

Staples, Minn., will erect a $50,000 hospital in that city this summer, which has been sadly needed for many years. It will be a modern building in every way, with a 20 bed capacity.

Dr. James R. Learmonth, formerly a student at the University of Minnesota and a member of the staff at the Mayo clinic at Rochester, has been appointed honorary surgeon to King George in Scotland.

Dr. Paul A. O'Leary, Rochester, has left for Budapest to attend the Ninth International Congress of Dermatology and Syphilology. He was appointed by President Roosevelt to represent the United States government.

Dr. Henry H. Healy, one of the old and prominent physicians of Grand Forks, died on September 1 at the age of 65 years. He was a graduate of Rush Medical College in 1892.

A $3,000 vial of radium, accidentally thrown away, was back at Moe Hospital, Sioux Falls, South Dakota, after an uncannily precise search by two University of Minnesota scientists who traced it from the hospital to a dump grounds and finally to the stomach of a squealing pig.

Dr. G. E. Clark, one of the pioneer physicians of Stillwater, Minn., passed away last month after a short illness. Dr. Clark was well known in all parts of the state, having taken an active part in state and county medical societies, and was for 12 years on the University of Minnesota medical staff.

One hundred fifty children from 45 North Dakota counties gained an average of five and one-half pounds each this summer at Camp Grassick, health camp of the state anti-tuberculosis association at Lake Isabel. This year 140 children were guests of the free bed fund, which is maintained by gifts from organizations and individuals and Christmas seal proceeds, and ten were paid for by their parents.

Dr. R. T. Westman, chief quarantine officer for the Minneapolis city health department, will leave the city to study at Johns Hopkins under a fellowship awarded him by the Rockefeller foundation. The fellowship provides a year's study, with possibility of a second year's award, toward the degree of doctor of public health. Dr. Westman has been quarantine officer for three years. He graduated from the University of Minnesota Medical School in 1930, and was awarded the gold medal of the Southern Minnesota Medical Association for the student with highest standing in the class.

A joint meeting of the Aberdeen and Whetstone Valley Medical Societies was held at Aberdeen on Wedensday evening, August 28th. A fine chicken dinner was served after which the following program was presented:—"Fractures of the Neck of the Femur," with Lantern Slides, Dr. W. D. White, Minneapolis; "The Use of the X-ray as a Diagnostic Agent," Dr. P. V. McCarthy, Aberdeen; "State Association Problems," Dr. A. S. Ryder, Flandreau, president of the South Dakota State Medical Association. Dr. W. H. Karlins, of Webster, S. D., Vice president of the Whetstone Valley Medical Society, presided over the meeting. About thirty doctors attended the session.

The American Medical Association will broadcast over the Blue network of the National Broadcasting Company at 5 p.m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) October 1 and each Tuesday thereafter, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." Each program will include a brief talk dealing with the central theme of the individual broadcast. The October schedule is as follows: October 1, "Burns," Morris Fishbein, M.D.; October 8th, "Hazards from Foreign Shores," W. W. Bauer, M.D.; October 15, "Unconsciousness," Morris Fishbein, M.D.; October 22, "Asphyxiation," W. W. Bauer, M.D; October 29, to be announced.

CLASSIFIED ADVERTISEMENTS

SURGEON WANTED

M.D. wants a surgeon to associate with him. Must be Lutheran or Catholic. Wisconsin. Address your reply to Box 92, care of this office.

INTERNIST WANTED

A Wisconsin town with a population of 10,000 has a splendid financial opportunity for a capable, well trained internist. Catholic or Lutheran preferred. Address Box 120, care of this office.

FOR SALE

Well established small hospital. Exceptionally fine income for last 20 years. Sacrifice price, special offering; get details. Low expense. Reason for selling: ill health. Address Box 119, care of this office.

PHYSICIAN WANTED

to share suite of offices now occupied by well established physician and dentist. Individual treatment room and laboratory. Located in new medical building in fine business and residential district. Address Box 91, care of this office.

FOR SALE

My residence of seven rooms, arranged for physician's offices in Alexander, N. D. Good surrounding farming country, and no doctor located here at present. Will sell at very reasonable price, with easy terms of payment. Address Box 118, care of this office.

TO CLOSE ESTATE

X-ray apparatus including: machine, horizontal and vertical fluoroscope, timer, Coolidge tube, tube stand, and dark room equipment in excellent condition. Will have X-ray man make installation. All for $425.00. Terms if desired. Address Box 122, care of this office.

DOCTOR WANTED

Doctor wanted in town of 500. Northeast South Dakota. No opposition. Twenty miles to nearest doctor and hospital. Best farming country in state. Retiring from practice. Up-to-date office. Will sell for $500.00. If you haven't this, don't reply. Address Box 121, care of this office.

The JOURNAL LANCET

Minneapolis, Minnesota
October 1, 1935

Vol. LV, No. 19
New Series

Fracture of the Surgical Neck of the Humerus*

F. J. Savage, M.D.
St. Paul

I LIKE Piersol's definition: "The surgical neck is just below the whole upper extremity." Fracture of the surgical neck is the common fracture of the upper end of the humerus. Fracture of the anatomic neck is most often seen in the aged. Separation of the upper epiphysis occurs most often in youth. My discussion deals with this common type of fracture. I am not discussing the most severe type with dislocation of the head and over-riding of the upper end of the shaft. In the type I am considering we may find impaction—displacement of the upper end of the lower fragment, or no displacement.

The ordinary displacement—if any—is a pulling inward of the upper end of the shaft, due to the muscle pull of the pectoralis major, latissimus dorsi, and teres major. When the head of the bone is tilted upward, the chief factor is the pull of the supraspinatus. Rotation is not common, due to the apposing action of the muscles inserted into the greater tuberosity from behind the head and neck, and the upward pull of the deltoid and biceps. Plate No. 1 shows direction of muscle pull.

A large percentage of the cases are impacted. With a fairly good position, these should not be disturbed—as a matter of fact, ordinary manipulation will not break up a firm impaction. Cotton says—If we get a half way decently shaped head in contact with the glenoid and get motion—that is the only really important thing to consider.

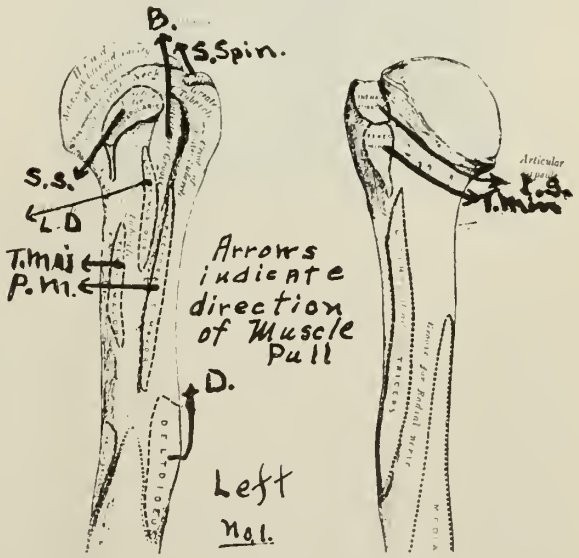


PLATE NO. 1

Diagnosis:

All the clinical symptoms of a fracture may be present, but since the final diagnosis rests with the x-ray, the less manipulation—prior to final reduction—the better for the patient. Immobilization during transportation is a factor of great importance in preventing additional soft tissue injury and additional pain.

*Presented at the annual meeting of the Great Northern Railway Surgeons' Association, Glacier Park, Montana, July 1, 1935.

Method of Reduction:

In the first case, there was an inward displacement of the upper end of the lower part of the shaft. With the patient under general anaesthesia, and the arm at right angles to his body, I used almost all the force I could to reduce this displacement, without effect. In the last case, without anaesthesia, and with the patient sitting, and his arm at his side, I used my right hand and wrist in his axilla as a fulcrum, and manipulated the lower end of the humerus with my left hand and got a perfect reduction. (Illustration of Method—from Howard & Eloesser— Jour. of Bone & Joint Surgery—Jan., 1934.) Plate No. 2. If



PLATE NO. 2
Taken from the Journal of Bone and Joint Surgery of January, 1934.

the patient is under general anaesthesia—in the prone position—the same principles may be applied by an assistant making traction in a line parallel with the body.

Treatment after Reduction:

Boehler: Aeroplane splint for 5-6 weeks with early elbow and forearm and hand motion.

Scudder: Axillary and upper arm pad—plaster shoulder cap and gauze bandage encircling arm and trunk. Forearm in cravat sling, thereby getting traction from the weight of the arm. Active motion may be allowed at the end of 2-2½ weeks. Also note Scudder's statement—"The sooner these gentle movements can be resumed at regular short intervals—the more rapidly the shoulder will improve."

Cotton says: "The bone once reduced does not tend to slip unless we abduct it. Fixation at the side—followed after not more than a week of active motion, will give better results. More and more I am handling private patients by the following method—reduction of deformity—letting the arm come down and starting early movement."

Howard & Eloesser summarize the after treatment as follows: Early motion—massage, and heat. The success of restoration of function rests on an intelligent use of exercise. A small range of passive motion may be used in the first week. At the end of the second week active motion is begun; at the end of the fourth week exercise to the point of pain, and in eight weeks, the patient has a painless, movable, and useful shoulder with almost normal range of motion. They emphasize the point that the long head of the biceps is the important factor in the maintenance of position after reduction.

I have treated six cases even more radically as regards early motion, than any of the authors already quoted. We may summarize the after treatment as follows: cravat or forearm sling—axillary pad of gauze to prevent skin irritation—encircling bandage about upper arm and trunk for from 2-3 days. Retentive dressings entirely removed at the end of 2-3 days, except a forearm or cravat sling—heat and massage several times a day, *and the pendulum swing* begun at the end of 2-3 days and gradually increased. One may, if desired, make an exception to this plan of treatment by adding an encircling bandage about the arm and body at night.

Why the necessity for early motion?

If all the muscles about the shoulder joint were cut away and then air injected into the joint, the head of the humerus would drop one inch from the glenoid cavity. When this loose baglike capsule is not put through early motion, the surrounding blood clots, and disuse tends to limit its elasticity. To offset this tendency of the capsule to become tied up, early motion is indicated. No doubt you all have felt the grinding and tearing sensation that one feels when a shoulder is forcibly manipulated after being kept in one position with practically no motion for a period of weeks.

I wish to emphasize two points already noted:

(1st)—There is, with proper reduction, but little tendency toward displacement, except with the arm in abduction.

(2nd)—The long head of the biceps is the chief factor in maintaining position after reduction. If the long head of the biceps is torn, this should first be repaired, and of course, the treatment as outlined, must then be modified.

Case 1. C. S.—age 47—Fell from ladder—Inward displacement of upper end of shaft. End result—displacement reduced by pendulum swing—no pain—full function.

Case 2. G. B. P.—age 71—Slipped on ice and fell on point of shoulder. Impacted—manipulated under anaesthesia. No changes on manipulation. End result about 90 per cent full function.

Case 3. Mrs. B. age 65—Slipped on ice. Slight impaction—position good. No manipulation. End result—full function.

Case 4. Mrs. M.—age 79. Fell down cellar stairs—cut head—Colles & surgical neck. No manipulation. End result—about 90 per cent of normal function.

Case 5. Mrs. B.—age 48—Fell on ice. End result—refused to hurt herself in pendulum swing. After two months had two physical therapy treatments and never returned. Arm elevation to 90 degrees only.

Case 6. J. R.—age 63—fell about five feet into a cinder pit. Angulation and displacement. Arm manipulation without anaesthesia. Shoulder motion in three weeks about the same as prior to injury—old polio case. Went to work four weeks after injury. Has as good motion of shoulder as prior to injury. Two months after injury doing his usual work.

PRIMARY CARCINOMA OF THE LUNG: ETIOLOGICAL CONCEPTS*

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SINCE a complete résumé of the entire subject of primary carcinoma of the lung is impossible in the time available, a detailed consideration of one feature of the disease will be more practical. Few discussions of all aspects of the etiology of these neoplasms are to be found in American or English literature, although Continental and especially German literature abounds in them. Consequently, etiological aspects of the malady appeared to be the topic of choice.

*From the Minnesota State Sanatorium.

Heredity—Schwyter found congenital malformations of the lung tissue in the neighborhood of the growth in six cases, and concluded that heredity or developmental anomalies might be the cause of pulmonary cancer. Katz, considering cancer of the lip from pipe smoking, advanced this argument: Why does one individual develop carcinoma while another under the same influence remains cancer-free? The only possible answer lies in the assumption of a predilection to cancer in one and not in the other person. Also, one must differentiate between a general disposition of the whole organism and a disposition localized in a particular group of cells or a single organ. Among 770 cases of primary cancer of the lung, 34 were found to have a positive hereditary strain and 15 cases had other primary tumors.

Heredity, then, may be etiologically significant in some cases, as proved by those in which carcinomata are found to be primary in more than one organ, denoting a general predisposition, or as substantiated by the hypothesis of a localized predisposition toward cancer when the organ involved also is subjected to additional etiologic agencies. Since actually only 34 in 770 cases are attributable directly to heredity, this factor alone cannot be considered either etiologically important or responsible for the marked increase of the disease.

Trauma—Ewing states that trauma can properly be held as the cause only when five definite requirements are met. He believes that cancers of the lung, like other internal carcinomata, can not be ascribed to trauma but result only from long continued irritation. Nevertheless, Wells and Cannon have presented a case which meets all of the demands set forth by Ewing. Others also have reported cases believed to be the result of trauma. Perutz in 1897 could find only four cases of pulmonary cancer attributed to injury. In 1924 Kikuth located six in the literature. The present review has discovered 19 cases in which traumatism is maintained to be the cause.

In view of the fact that only 19 of 746 cases have been found due to trauma, it seems justifiable to conclude that trauma may be the chief causative agent of pulmonary carcinoma in some few instances, but that its significance as an etiologic factor does not demand great consideration.

Causes of Cancer Among the Schneeberg Miners—The dust of the Schneeberg mines contains bismuth, nickel, cobalt, arsenic, fungi, and radioactivity. What single factor, then, is re-

sponsible for the Schneeberg mine cancer. Each of these ingredients individually and in various combinations, as well as the dust itself, has been assumed to be the cause *sine qua non*. The only conclusion available is that, since non-mining residents of the region do not develop these neoplasms while the miners are afflicted with them, they may be regarded as an occupational disease arising from some conditions peculiar to the workers alone.

Pulmonary Tuberculosis—Bayle in 1810 published a report of the first coincident case of pulmonary tuberculosis and pulmonary carcinoma. Later Rokitansky denied their coexistence, arguing that each type of granuloma produced a poison which excluded the development of others. Virchow, too, believed that the two diseases could not coexist. Later, opinion veered toward the opposite belief. Cherry, in 1925, asserted that cancer attacks in later life those who have overcome incursions of tuberculosis earlier. He argued that acquired resistance to tuberculosis is the predisposing cause of carcinoma, the lung-cells reacting differently to the same stimulus, the tubercle bacillus. Ewing also considers tuberculosis the cause of these neoplasms.

Certain it is that the two diseases may be coexistent: the finding of 187 contemporaneous cases among 2,031 carcinomata of the lung establishes that. Given, then, that the two diseases may cöexist, does this fact, or do others, support the view that tuberculosis is the cause of lung-cancer? The findings of Lubarsch of Breslau are enlightening on this point. In 6,536 necropsies he found tuberculosis in 2,668 and of these, 117, or 4.4 per cent also had carcinoma. Of the 3,868 cases without tuberculous lesions, 452 or 11.7 per cent had cancers. Thus, carcinomata were found three times as frequently in the non-tuberculous as in the tuberculous individuals.

So, to conclude, tuberculosis cannot be considered a significant factor in the etiology of lung-cancer or in its increasing frequency, but can be held responsible for the origin of carcinoma in a small proportion of cases.

Influenza—Describing them as possible precancerous epithelial metaplasia, Askanazy first, in 1918, pointed out the changes in the bronchial epithelium following influenza which he found in 38 of 90 cases of grippe examined postmortem. Schmidtmann at virtually the same time made similar observations and in the grippe epidemic of 1920 studied metaplastic changes in 150 influenza cases. Then in 1925, appeared Berblinger's paper which placed responsibility for the increased frequency of pulmonary cancer entirely upon influenza.

However, Seyfarth, Kikuth and Breckwoldt all found few cases of grippe in their lung-cancer material. This impression is confirmed through the discovery in the present research of only 55 cases with a preceding history of influenza among 795 pulmonary carcinomata. Staehelin argues that in Basel in 1900 to 1923 there were 67 lung-cancer cases with a sudden rise in incidence in 1912, four years before the influenza epidemic. The series of Assmann, Moenckeberg, Hampeln, Seyfarth and Materna also show an increase beginning before 1918. Probst's material denies support for Berblinger's point of view since pulmonary cancer has increased in Zurich continuously since 1910.

So, influenza, as an agent originating chronic irritation, may be considered the cause of some metaplastic lung carcinomata, but cannot be accepted as a major factor in the increased incidence of cancer of the lung generally.

Other Chronic Lung Diseases—Among the chronic pulmonary lesions besides those of influenza and tuberculosis accused by various authors of being the primary etiologic factors in some cases of carcinoma of the lung are pneumoconiosis, bronchitis, lung abscess, asthma, pneumonia of both lobar and bronchial types, syphilis and bronchiectasis. Some students maintain that only on the basis of chronic irritation, and others on that of metaplasia, are these diseases etiologically important.

Evidence of a causal relationship between chronic lung-lesions and pulmonary cancer is to be found in reports by various authors of cases with histories of previous lung diseases. Of Frommel's 41 cases, 29 had had other chronic lung affections before cancer developed; chronic bronchitis, bronchiectasis or emphysema were present in the histories of 21. Mention was made of some previous lung affection in the histories of 34 of the 57 cases cited by Dynkin and Sachs; among these 22 had been coughing for years. Menetrier states that there is no primary carcinoma of the lung without previous chronic inflammation.

Evidence appears, then, to incline toward a causal inter-relationship between chronic lung-diseases and pulmonary carcinoma. All these diseases can be reduced to a common classification —chronic infective or bacteriological irritation— which might be the cause of the metaplasia so frequently observed; and so, this whole group of diseases must be considered etiologically important.

Roentgen Ray—The discovery of the X-ray in 1895 and its subsequent extensive use coincide with the increasing prevalence of lung-cancers; and this fact is the basis of Kikuth's suggestion that the X-ray may be significant in the etiology of the disease. He, like Probst, can find no proof of the idea in his material. Moise mentions X-ray dermatitis among other irritation carcinomata. Other works fail to support belief in the roentgen ray as a cause of pulmonary cancer; but the possibility of it should be recognized.

Dust Inhalation—Hampeln proposed that lung-cancer is a dust inhalation disease and explained the increased number of these neoplasms as due to the increase of dust produced by the growth of traffic and industry. Heilmann shows that the pathological changes induced by dust in the lungs present a histological picture, the ultimate sequence of which is carcinoma. Materna, too, considers street-dust the prime etiologic factor in pulmonary carcinoma because both have increased during recent years. Also, in support of this, Folger found lung-cancers more frequently in horses, dogs and other animals exposed to street-dust than among cattle and others unexposed.

To the contrary, Berblinger, after specifically examining 12 cases and finding no favorable evidence whatsoever, denies that dust of itself is a cause of pulmonary cancers. Kikuth prefers to leave open the question of increased dust in the larger cities, because, regardless of its quantity, it has changed in quality, at least in respect of a relatively higher mixture of benzene fumes.

Thus far, then, street dust may be conceded to be a contributing factor and, in some instances, even the primary etiologic agent, but its etiological significance is not generally considered important.

Inhalation of Tar Particles—Jamagiva believes the increase in lung-neoplasms may be attributable to tar dust of roads and streets. Heilmann refers to the possible dependence of lung-cancers on the effects of particles of tar, oil and other substances raised by automobile traffic. Simpson, too, regards the rarity of lung-cancer in Hong Kong and Singapore, where no tar is used, as suggestive, for, he says, it is known that tar produces carcinoma both clinically and experimentally.

To refute these suggestions, Konrad and Franke deny that the increase of the disease in Riga is due to either an increased number of automobiles or increased use of tar, since neither has taken place. Vincent made a survey which disclosed no positive relationship between the disease and the prevalence of street-tarring in France.

So, inhalation of particles of tar from streets and roads may be counted among the chronic irritants responsible for lung-cancers; but it is in no sense their *sine qua non* cause.

Motor Exhaust Fumes—Duguid mentions the exhaust gases of motor-drawn vehicles as possible causes of lung-cancers, and Klotz says, "It is true that the incidence of carcinomata of the lungs shows a parallelism with the increased use of automobiles." Exhaust fumes of internal combustion motors and smoke with its by-products are related to tar, whence one may ascribe to them an influence on bronchial mucous membranes already damaged by chronic inflammation.

Data supplied by Schlapfer show that tars obtained from petroleum products during the process of combustion have an aromatic character only when the disintegrating temperatures reach 900 degrees or more, which seldom occurs in the cylinder walls of gas motors. Hence, it follows that exhaust gases contain no combinations related to the coal tar products or derivatives with which cancer was produced experimentally in animals.

It may be concluded that, while it is alluring to believe there is a causal relationship between motor exhaust gases and lung-cancer, the theory lacks sound proof.

War Gases—Kikuth and others mention war gases as causative agents. Ricker and Adelheim say that a metaplasia of the cylindrical cell epithelium of the lung, analagous to the change induced by influenza, follows exposure—and a single exposure, at that—to such war gases as phosgene and chlorgas.

Hoffman, however, found that hospital admissions for gas poisoning in the American Expeditionary Forces totalled 70,552, and the deaths, 1,221; yet among all these there was not one case of carcinoma of the lung. This author analyzed the causes of death of 546 of these patients, most of them having been examined on the necropsy table, and none was suggestive of pulmonary cancer.

So appears, not only insufficient evidence to maintain war gases among the etiologic factors of pulmonary cancer, but also a predominance of opinion against it, as other works have shown.

Industrial and Occupational Hazards—Of course, the cases of the Schneeberg miners will be recalled under this heading. So many occupations have been mentioned by various writers and their terminology and grouping have differed so much that no exact statistical summary is possible.

The most extensive as well as the most recent study of this phase of the etiology was made by

Brockbank. He assembled 898 cases occupationally classified and concluded that no one occupation is outstanding; yet the laboring class seems predisposed while the professional class is relatively immune. Brockbank believes that the study of the influence of work can only be made by obtaining a detailed occupational history from the beginning of apprenticeship.

The state of this subject is unsatisfactory, but until further information is brought to bear on it, these hazards cannot be accorded any etiologic significance, except as they involve chronic irritation of the lungs.

Tobacco Smoke—Adler first noted that male cases exceed female, and attributed the difference to irritation caused by smoking. Berblinger admits that smoking may be an additional causative factor in lung-cancers, and Fahr sees an increasing stimulus in the inhalation of cigarette smoke.

The mere fact, says Staehelin, that there are more men than women smokers and more male than female cases of lung-cancer is not sufficient proof of the etiologic influence of smoking. Kikuth, finding little history of smoking among his cases, thinks that lung-carcinoma would have to occur much more frequently among those who smoke to excess before this could be regarded as a big factor.

Tobacco smoke as a lung-irritant may be considered among possible causes of lung-cancers, but cannot be counted an important one in the present state of information.

General Hygiene—Kikuth and others have shown that improvement of the general hygiene and sanitary conditions in Saxony has decreased the incidence of lung-cancers among the miners there. Sociological approach to this problem may demonstrate that better industrial and domestic sanitation might improve the situation; but so far the experience at Schneeberg is the only justification of this hope, except as Staehelin states: "The prophylactic fight against pulmonary carcinoma is much more important since therapy to date is ineffective and the early symptoms rapidly lead to death."

Conclusion—Present opinion seems to agree that no single agent is the sole cause of lung-cancer. Without an exception all of the 14 etiological factors so far suggested have one common quality, the production of chronic pulmonary irritation. Chronic irritation, whether simple or complex, may be (1) chemical, (2) mechanical, (3) bacteriological, (4) radioactive, or (5), as has not been investigated but as occurs in several modern industries, thermal. Several of the causes or possible causes that have been discussed may be classified under two or more of these captions, but all of them fall under at least one. Since they are so diverse, the only conclusion possible is that chronic irritations are the real activating or causative factors in the disease. This is not to say, of course, that all chronic pulmonary irritations issue in carcinomata, and it is to be hoped that future research will make this definition of the cause either more specific or more inclusive or both.

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CHRONIC URINARY TRACT INFECTION

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IT IS not my intention to discuss urinary tract infection in general, as the title of this paper might imply. Any single part of the urinary tract anatomically would furnish more than sufficient material for a twenty minute paper from the standpoint of infection.

In the experience of every one, the treatment of such infections is more or less unsatisfactory, and a fair percentage of chronic infections is absolutely intractable to ordinary methods of treatment. A. L. Clark[1] has stated that with present methods of treatment, 60-70 percent of patients can be placed in the satisfactory column, and that previously only about 15 per cent could be so classified.

In the treatment of urinary tract infections, certain facts are axiomatic. First, infection is rarely primary in the urinary tract, but is secondary to infection elsewhere in the body, and the urinary tract infection will not respond to treatment unless the primary foci of infection is removed. Secondly, obstruction in any portion of the urinary tract resulting in stasis will cause a continuance of the infection until free drainage is obtained. Anatomical anomalies and extrinsic pressure on the ureters, calculi, new growths, and inflammatory strictures, are the most common causes of obstruction.

Quinby[2] states that before starting treatment six questions should be answered:

1. What is the source of infection outside of the urinary tract?
2. Is it acute or chronic?
3. Are the urinary passages and related genital structures anatomically normal?
4. What is the localization of the infection in the genito-urinary tract?
5. What damage, if any, has already been caused by the infection?
6. What is the type of infecting organism?

Bacteriologically, aside from the gonococcus and tubercle bacillus, there are three groups of organisms that are the most common offenders. In order of importance these are: (1) the colon bacillus group, (2) the staphylococci, (3) the streptococci. Less common offenders are the B. Pyocyaneous, B. Proteus and the paratyphoid group.

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Diagnosis includes the two-glass test in males and a catheterized specimen in females. Microscopic examination of the sediment should be made by placing a few drops of the centrifuged sediment on a slide, covering with a cover-glass and examining with the dry, high power lens of the microscope. The cover-glass should then be removed, the specimen dried and fixed by heating and a Gram stain applied. Examination should then be made with the high-power, oil-immersion lens. In one or two examinations, the offending organisms usually can be identified. In a few cases it may be necessary to culture the urine, using Endo's medium for bacilli and brein broth or blood agar for cocci.

In bacillary infections, acidification of the urine using large doses of ammonium chloride in either aqueous solution or in the form of half gram pills up to six grams daily in divided doses can be safely used. Up to 60 grains daily of methenamine may also be used, orally or intravenously. Ten cc. doses of one per cent mercurochrome in 500 cc. of normal saline may also be used in acute infections. In chronic bacillary infections the ketogenic diet has been a valuable aid.

These methods may also be used in treating acute coccic infections, and frequently the infections are mixed. In addition, however, .3 gm to .45 gm. of neoarsphenamine should be given intravenously every 4 to 5 days for 5 doses. Neoarsphenamine is particularly useful in staphylococcic infections.

The greater part of my discussion will be limited to infections of the prostate, seminal vesicles, and posterior urethra, not tuberculous in origin, and essentially not gonorrheal. These organs are frequently the source of reinfection of the urinary tract, and also act as an important foci for systemic infection.

If a concensus were taken among the general profession as to the importance of this portion of the urinary tract as a focus of infection, the replies would probably be that the seminal vesicles and prostate were not of importance as foci of systemic infection, or else that familiarity with the subject was such that a definite statement could not be made. The tendency is to think of infections in these portions of the urinary tract as giving rise to urinary complaints such as frequency, dysuria, urgency and pyuria and not as foci giving rise to symptoms in other parts of the body. If an opinion as to the methods and value of treatment were to be asked the answers would probably be still more uncertain.

The general methods of treatment enumerated

apply as well to this portion of the urinary tract as to any other.

Textbooks have given little mention to the seminal vesicles and prostate as foci, although urologists have long considered them as such. Pelouze[3] is the only author who gives a reasonably complete description, although there are many articles in the current literature on the subject.

It has been generally accepted that nearly all infections in the prostate and seminal vesicles were gonococcal in origin; and if there was no history of gonorrhea the prostate could be ruled out. Stuhler,[4] of the Mayo Clinic, reports that gonorrhea played no part in 56 per cent of their cases of chronic prostatitis. Pelouze recently reported that out of 100 such cases only two had had an attack of gonorrhea within 20 years and only seven gave a history of ever having had gonorrhea.

As a foci of infection, the teeth, tonsils, and sinuses are always considered, but statistics show that four and one-half years pass before prostatic studies are made.

Pelouze[5] states that 72 per cent of men having focal infection symptoms have definite infection in their prostates, and that 35 per cent of all men over 35 years have such foci of infection. It can be stated that in men there are three foci of infection—teeth, tonsils and prostate.

Von Lackum has proved that many general conditions can be caused by chronic vesiculo-prostatitis, among the most interesting of these are: Arthritis, spondylitis, calcaneal spurs, neuritis, myalgic and neuro-muscular pains, iritis, neuroretinitis, secondary anaemia, urticaria, angioneurotic edema, lower abdominal pain, functional gastric complaints and backache. Low backache is the most common of these.

Culver[7] has divided the symptoms of chronic prostatic and vesicular infection into four groups:

1. Urinary.
2. Sexual.
3. Referred.
4. Metastatic.

The urinary symptoms are those of frequency, dysuria, nocturia, incontinence and other changes of urinary control.

The sexual complaints consist of impotency, sexual inferiority, and the usual complaints of the sexual neurasthenic.

The referred group includes those complaining of low backache, abdominal, rectal, and perineal pain. According to Head, the nerve supply of the prostate is from the sympathetic and parasympathetic fibres from the tenth dorsal to the third sacral segments. Thus it is possible for a prostatic pain to be referred to any part of the body below the diaphragm.

Von Lackum[6] reviewed 850 cases of low backache associated with prostatitis and seminal vesiculitis. All cases in which the backache could be attributed to any other cause, such as arthritis of the spine, trauma, sciatica, sacro-iliac strain were excluded from the series. There remained 301 cases. The average duration of backache was five years in the entire group. The pain was variable in character, sometimes only a discomfort, other times a stiffness, burning, bearing-down ache or soreness. Of those who received treatment directed toward the prostate, over 90 per cent became symptomatically well, or definitely improved. This emphasizes the importance of investigating the prostate in every case of low backache.

The metastatic group includes those where distant parts are diseased by toxins or infections borne by the blood stream from the prostate. I have already enumerated the conditions that may result from such metastatic infections.

In such cases the prostate is usually associated with other foci, but it may act solely by itself. Some investigators feel that the prostate acts as a foci of infection only so long as other foci exist to feed it. Clinically, however, the infection in the prostate will persist after the foci that originally fed it have been removed, and the prostate must be treated before the metastatic symptoms can be relieved.

Etiologically, prostatic infection may arise by direct extension from the urethra or by invasion from the blood stream. From the urethra the gonococcus is the usual infecting agent. Investigation has shown that in acute gonorrheal infections of the prostate the gonococcus dies out quickly—probably 18 months being the time limit in which it may be isolated; after this only secondary invading organisms are present.

Urethritis due to other bacteria may infect the prostate; or the prostate may be the cause of simple urethritis.

Recent studies, however, have shown conclusively that prostatic infections are rarely primary. They are in an over-whelming majority of cases associated with dental and tonsillar infections, and the latter constitutes the primary foci from which the prostate obtains its infection. Other foci may be the source of trouble; among these,

the gall bladder, intestinal tract and facial sinuses must be considered.

Insofar as habits are concerned, a sedentary life pre-disposes to prostatic congestion. Over distension of the bladder is possibly also a factor, and occurs in men who ride in cars a great deal.

Bacteriologically, cultures from the infected prostate show a multiplicity of organisms, with usually one predominating. Pelouze found the staphylococcus most frequently, and next various strains of streptococci.

Nickel,[8] after analyzing 3,500 cases at the Mayo Clinic, stated that the normal prostate contains a mixed flora of organisms just as does the mouth; and that long chain streptococci probably are not pathogenic; that the short chain hemolytic streptococcus and the hemolytic staphylococcus should be regarded with suspicion. The streptococcus viridans has been isolated from the prostate and seminal vesicles, and when injected into experimental animals has shown a marked tendency to localize in tissues comparable to those of the patients which were diseased.

Pathologically, every infection regardless of the organism produces a definite inflammatory reaction in the tissues. This consists of areas of round cell infiltration throughout the structure of the gland. As connective tissue replacement progresses, and fibrosis occurs, many of the tubules become occluded and the acini became distended with debris; drainage of the gland thus becomes blocked. As the fibrosis advances, sensory nerves may become impinged, producing perineal pain and itching. Following a long period of infection, the fibrosis may involve the whole gland and a small hard prostate results.

More acute conditions may result in swelling of the prostate and seminal vesicles, producing large tender masses which by their pain may simulate acute appendicitis or other intra-abdominal conditions. In cases of suspected appendicitis or acute intestinal obstruction, a rectal examination should always be made.

When areas of the gland lying below the bladder floor are involved, transverse contractions may result and ridges appear in the floor of the bladder; these are the inflammatory types of median bars, and are a frequent cause of urinary obstruction.

Grossly, the prostate may show changes in consistency—on palpation it may be soft and boggy, or of a definite hardness. The vesicles may be soft and boggy. Again, the prostate and vesicles may feel normal, and yet on examination of the secretion, large number of pus cells and pus clumps are present. It must be remembered that the small, apparently atrophied prostate is often the worst offender.

Various degrees of inflammation of the urethra may be found on urethroscopic examination—from the sub-acute stage to the chronic sclerotic with definite contraction. In practically all cases of long standing prostatitis there is definite narrowing of the posterior urethra. It is in the latter especially that dilatation with sounds or the Kollman dilator is indicated. Von Lackum[9] has insisted that dilatation of the posterior urethra to 35 F should be possible, without undue discomfort before the desired goal has been reached.

Diagnosis

From the standpoint of diagnosis, the symptoms may point to the prostate as the offending source, but in all cases of back pain, indefinite gastro-intestinal complaints, general debility with infection as a possible cause and in patients who do not improve after infective foci in the teeth and tonsils have been removed, the prostatic secretion should be examined microscopically.

This may be done by obtaining secretion by massage, placing it on a glass slide and without staining, cover with a thin cover-glass, examination should be made immediately with the high power objective.

Von Lackum's[9] method of grading according to the number of cells in the high powered field is satisfactory—

One to 5 cells—normal.
Grade I from 5 to 10 cells.
Grade II from 10 to 50 cells.
Grade III from 50 to 150 cells.
Grade IV more than 150 cells.

Clumped cells, regardless of number, should always be considered evidence of a severe degree of infection.

A single negative examination in a suspicious case should never be regarded as evidence of no infection—the infected material may be blocked in so that it is not obtained on the first massage.

The number of pus cells present in the secretion is not necessarily evidence of the virulence of the micro-organism.

There may be no symptoms referable to the urinary tract. Usually there are occasional attacks of frequency on urination, the patient having to get up once or twice during the night. There may be some burning and desire to void after the bladder is emptied. The urine is quite often normal, but more often there are 3 to 4

pus cells per field, very rarely frank pyuria. Often there is the so-called "morning drop." Sometimes the only symptom may be a feeling of fullness in the pelvis. Another type of case is that in which a complication such as an epididymitis follows heavy lifting or straining in the absence of a Neisserian infection.

Treatment

The prostate cannot be rendered free from pus as long as other foci of infection remain, and repeated searches for other foci should be made during the course of treatment if microscopic study of the secretion does not show progress.

Clumping of pus cells is a sign of poor drainage, and the disappearance of clumps is the first evidence of improvement, after this progress is shown by a reduction in the number of pus cells.

Massage should not be repeated at oftener than three-day intervals, and in the presence of eye lesions, cardiac difficuties or extensive arthritis, attempt should not be made to obtain secretion at the first massage. If the prostate is the offending foci in these conditions, severe exacerbation of the symptoms can be expected—the reaction usually comes on within 12 hours and disappears within 24 hours. Following massage, weak silver nitrate or some other mild antiseptic should be used in the posterior urethra.

Pelouze[3] states that the administration of vaccines in large doses during the course of treatment may do much harm.

Infected prostates are rarely rendered pus free in less than three months of regular treatment, and the course may have to be repeated after a six-month interval. If infection still persists, other foci of infection in teeth, tonsils or sinuses may still be present, and the presence of cysts in the posterior urethra must be considered.

Studies of the teeth and prostate of those freed of infection should be made at three-month intervals, for a year, at least. Recurrence of prostatic infection almost invariably indicates further tooth socket infection.

Routine treatment in cases of prostatitis should consist of:

1. Complete physical examination with special reference to foci of infection and their removal.

2. The use of a foreign protein intra-muscularly.

3. Examination of urethra with urethroscope for stricture and dilatation with the Kollman dilator instituted. The Kollman dilator should be used until dilatation to 35 F in the posterior urethra is possible without undue pain or bleeding. Von Lackum has repeatedly stressed the importance of the latter. In using the Kollman dilator no anaesthetic should be used in the urethra. Silver nitrate one half to one per cent should be instilled in the posterior urethra after dilatation.

4. Prostatic massage never over three times a week and preferably twice.

5. Heat locally—the Elliott Regulator with prostatic applicator may be used—and hot Sitz baths twice daily have some value.

6. Adequate diet, with plenty of fluids, alcoholic beverages, condiments and rich heavy food should be avoided and satisfactory regulation of the bowels obtained.

7. If progress seems halted, treatment should be discontinued and the patient advised to return in 6 to 8 weeks. Occasionally the patient will get well when left alone. Also in cases of resistant or recurring infection, small chronic abscesses may be present which constantly cause re-infection. Fulguration of the dilated duct openings is advisable, but must be done by a urologist.

Mistakes in treatment:

1. Massaging too early after an acute infection.

2. Omission of mild irrigations after the massage.

3. Failure to reach and strip the seminal vesicles.

4. Failure to recognize the seminal vesicles as a foci of infection.

5. Failure to dislodge coagulated or sealed-in pus on massage. This may be corrected by use of the Kollman dilator and by irrigation of the posterior urethra before massage with 1:8000 potassium permanganate.

6. Presence of urethral strictures.

7. Lack of knowledge of how to massage.

Technic of Massage

1. Bladder full; patient not be void prior to massage; or it may be distended with $KMNO_4$ solution.

2. Position: Patient kneeling on table in knee-chest position.

3. Patient should bear down during the maneuver.

4. Adequate lubrication—KY.

5. Maneuver: The flat of the right index finger should be used; not the tip. It should cover as wide an area as possible—begin as high up on seminal vesicle as finger will go—steady and firm pressure bringing finger down over seminal vesicle and lobe of the prostate, maintaining continuous pressure for several seconds. The direction should not be toward the mid-line, as this

area is extremely sensitive and the area involved lies in the lateral lobes. This should be repeated 2 to 10 times, and then the opposite side massaged in a similar manner.

6. Only sufficient pressure to evacuate the secretion should be used, and will vary with the individual case.

Microscopically pus cells will be present in the secretion all the time during the treatment and will probably persist after treatment has been discontinued—symptomatically, however, improvement occurs.

Diathermy has been advocated by some, and has been regarded as entirely useless by many urologists. Hot rectal irrigations are of value, particularly in acute prostatitis, but are difficut to carry out. If heat is of value, it can be easily applied with the Elliott machine by means of the prostatic applicator. There have been few reports so far on this method, but the ones that have been made are favorable. I have used it in 10 cases, and believe that the response to treatment has been more rapid. It seems most satisfactory to apply the heat and follow with massage. Prostatic drainage is certainly increased when this is done, and the number of pus cells in the expressed secretion diminish more rapidly than they otherwise would.

In conclusion, I will briefly cite 3 cases illustrative of prostatic infection.

Case I. Male 46 years. Sheep-shearer. Married —no children. Previous health good except one attack of lumbago 10 years before.

In 1929, feet became swollen, blue, with severe pain and especially if he was on his feet they were covered with perspiration.

In 1930, seen at Mayo Clinic, and was advised to have a lumbar sympathetic ganglionectomy because of vascular spasm, although at the time, infection was thought to be a factor. All infective foci were removed. The prostate was examined at that time, but was not considered a factor.

After the operation, the swelling, blueness, and cold perspiration disappeared, but the pain persisted as severe as ever. There was also stiffness in the joints and it was only with great difficulty that he could be up on crutches.

He returned to Rochester one year after the operation, and was told that the operation had not given the desired result, and a further cause would have to be sought.

The prostatic secretion at this time was cultured, and a streptococcus thought to be pathogenic was isolated. The prostate was small, hard and fibrous, 10-20 pus cells were present per high power field. He was advised to have prostatic treatment supplemented by autogenous vaccine prepared from the bacteria isolated.

One course of treatment was given, and he then returned to Montana to have treatment continued.

At first he could get into the office only with severe pain, but improvement gradually continued, and after two courses of treatment in a period of six months he could get along without crutches. At the end of a year the pain had entirely disappeared; there was some stiffness but no swelling. He still continues treatment at intervals and believes he is benefited by it. At the present time he is raising beets by irrigation and necessarily is on his feet for long hours, and frequently in water.

He attributes his improvement to the prostatic treatment, as there was steady improvement from the time they were started.

Case No. 2.

Male, age 28. First seen in 1928. Laborer. Married—3 children. Gonorrhea 12 years previously. Health had been good, except for the past five years had had severe low backache which has incapacitated him completely. He had seen several doctors, had been to various Hot Springs, had spent all his money and had not obtained relief. Tonsils had been removed and all suspicious infected foci. There was no demonstrable lesion in the spine on X-ray.

A prostatic examination had not been made, and there were no urinary complaints unless inquired into. He stated the nocturia, once nightly, was present, and at times there was a slight discharge at the meatus. The prostate and seminal vesicles were large, boggy and tender.

Microscopic examination of the prostatic secretion showed the field covered with clumped pus cells—the predominating organism was a staphylococcus. No autogenous vaccine was prepared.

Prostatic treatments were given three times weekly as outlined. After the first course of treatment, there was as much pus in the secretion as at the begining, and very little change in the low back pain.

Following a second course of treatment, marked improvement was noted. After a third course the back pain had subsided entirely. I last examined his prostate in May of this year. He had been free from back pain for four years and was working at ordinary labor. There 10-15 pus cells per field in the expressed secretion.

Case No. 3.

Male, age 31. Seen February 25, 1935. Mar-

ried—4 children. No history of gonorrhea. Tonsils had ben removed previously. Teeth, negative as foci. Frequency and burning on urination for three weeks with nocturia as many as eight times. Two weeks after onset of urinary difficulty he began to have pain in the right kidney region.

There was a large quantity of pus in the urine voided in the second glass, more than in the first. The prostatic secretion showed pus IV. A right pyelogram showed no abnormalities in the kidney or ureteral outlines, but pus cells were present in the specimen from the right kidney. Microscopic examination of guinea pig innoculation for B. Tuberculosis was negative.

The urine was acidified, and large doses of Urotropin were given with some improvement, but the pyuria and an undesirable amount of frequency continued.

In April, 1935, a Gram stain showed a Gram negative coccus which could not be cultured. He was placed on a ketogenic diet and neo-arsphenamine was given intravenously. The urine cleared quickly after two doses of Neo, and the urinary difficulty almost completely disappeared. The prostatic secretion, however, still showed large numbers of pus cells, and locally treatments were started three times weekly.

At the present time the urine is clear, and only occasional pus cells present. He is free from symptoms. Fifty pus cells per high power field are still present in the prostatic secretion.

It would seem that in this instance the prostate was the primary foci of infection as frequency and dysuria appeared 2 weeks before the pain in the right kidney region.

Summary

In summary it may be said:

1. Chronic vesiculo-prostatitis is a common disease and frequently the site of focal infection.

2. Approximately half of the cases are not venereal in origin.

3. Symptoms may not be referable to the urinary tract.

4. Microscopic examination of the prostatic and vesicular secretion is the only means of diagnosis.

5. The principles are first to eliminate all other foci of infection, to increase the circulation and to establish drainage by massage and treatment of the posterior urethra.

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CASE REPORTS

REPORT OF A CASE OF ALLONAL POISONING

C. W. Del Plaine, M.D.
MINNEAPOLIS.

THIS patient was a single woman, 29 years of age, who was found unconscious in her room about noon. She had quarrelled with her fiance the evening before and had not been seen since midnight.

On examination she was found to be in coma, and attempts to rouse her were unsuccessful. The eyes were widely dilated, and reacted very faintly to light. Breathing was of the Cheyne-Stokes type and very labored. Pulse rate was 50 and weak. The heart tones were regular but distant. Blood pressure was 110/60. There was no odor on the breath. The whole body was limp.

An attempt at suicide being suspected, the patient was given an intramuscular injection of Coramine 1 c.c., and was taken immediately by ambulance to a near-by hospital.

On admission she was given a gastric lavage of four quarts of very strong tea, a strong tea enema, and an intramuscular injection of caffeine-sodium-benzoate 7½ grains. External heat was applied. Her temperature was now normal, pulse 100, respirations regular, 20 per minute, but very shallow. Blood pressure was 120/80. By seven p. m. she was conscious enough to admit that she had taken twelve allonal tablets about nine o'clock in the morning.

The laboratory findings were as follows: Urine: clear amber, spec. grav. 1010, no albumin or sugar, microscopically a few epithelial cells and occasional w.b.c. were found. Blood: Hemoglobin 98 per cent, leucocytes 5,800, lymphocytes 33, P.M.N.'s 67, erythrocytes 4,800,000.

For several days she was quite nauseated, drowsy, and weak. She was discharged from the hospital on the fifth day. One week later she took five allonal tablets, and became comatose.

An emetic was given, with 1 c.c. of Coramine intramuscularly. She recovered in a couple days, and has not attempted suicide since.

Correspondence with Hoffman-La Roche, Inc., manufacturers of allonal, shows that they have in their files records of several persons who have taken more than 50 tablets of allonal in attempting suicide, and the record of one person who took 120 tablets without lethal results. They also report two successful suicides, in which the amount taken was 50 tablets.

Each allonal tablet contains 1 grain allyl-isopropyl-barbituric acid chemically fused with 1⅔ grains amidopyrine U.S.P. The hypnotic component of allonal, allyl-isopropyl-barbituric acid, not only acts promptly but about 80 per cent of it is readily destroyed in the system. The rest is quickly eliminated, so that the customary therapeutic doses do not cause sleep beyond the normal period. Likewise, because of the high rate of breakdown and elimination, drowsiness persisting into the following day is uncommon.

Bastedo (Materia Medica, Pharmacology and Therapeutics, Third Edition, 1933) gives the following treatment for acute poisoning by a barbituric acid derivative: (1) Lavage of stomach and colon, (2) The establishment of diuresis, as with much fluid by stomach or by rectum and hypertonic (10 to 30%) dextrose intravenously, (3) Heat externally, (4) Oxygen inhalation, if cyanotic, (5) Hypodermics of strychnine sulfate, 1/20 grain, Caffeine-sodium benzoate 7½ grains, and ephedrine-sulfate ¾ grain, (6) Catheterization of bladder, (7) Emptying of bowels by enema and colonic irrigation and by magnesium sulphate left in the stomach after lavage.

In the use of strychnine as an antidote for a barbituric acid derivative, it is essential to give a sufficient amount to obtain the desired result, but not so much as to change the case from one of acute barbital poisoning to one of acute strychnine poisoning.

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REPORT OF A CASE OF ABNORMALLY DEVELOPED SALIVARY GLAND TISSUE*

P. W. Sweet, M.D.
CENTRALIA, WASHINGTON

Of at least passing interest is an unusually located salivary gland mass found in a male thirty-five years of age. This tumor was found just within the angle of the mouth, causing inconvenience on mastication. It had been present for seven years to the patient's knowledge, possibly and probably longer. Saliva had flowed freely from the gland, especially at meal time, to which he had now become somewhat acustomed, so it caused only slight annoyance. The small mass was frequently bitten while eating, which made the angle of the mouth sore at times, but never for a long period. The small mass—about the size of a pea—was removed by our Dr. C. Grant Bain, and the patient made an uneventful recovery. No malignancy was revealed after thorough and careful study of numerous slides made from the specimen.

When salivary glands are mentioned, we are wont to think of the pairs of parotid, submaxillary and sublingual glands. As a matter of fact, there are twelve to fourteen pairs of salivary glands, there being between eleven and thirteen pairs of alveolo-lingual glands, which line the buccal cavity on each side of the mouth, lying in the vicinity of the opening of Wharton's duct.

The mass we found was evidently one of these masses of normal salivary gland tissue, having attained a size somewhat larger than usual.

*From the records of the Sweet Clinic.

Officers
South Dakota State Medical Association



A. S. RIDER, M.D.
President
Flandreau, S. D.



J. F. D. COOK, M.D.
Secretary
Langford, S. D.

NOTE: The following meetings of the Council and House of Delegates, as well as the report of Dr. W. A. Bates, as delegate to the A. M. A., were unavoidably omitted from the regular proceedings published on July 15th, and are herewith published.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION IN FIFTY-FOURTH ANNUAL SESSION

PIERRE, S. DAK.

First Meeting of the Council

Monday, May 13, 1935, 4:00 p. m.

Meeting called to order by Dr. H. R. Kenaston, Chairman of the Council.

Roll Call: Drs. W. G. Magee, A. S. Rider, J. L. Stewart, E. A. Pittenger, M. J. Hammond, C. E. Sherwood, B. M. Hart, J. C. Shirley, B. A. Bobb, N. J. Nessa, S. M. Hohf, R. B. Fleeger, H. R. Kenaston, J. F. D. Cook.

Secretary announced a quorum present.

Secretary read the minutes of the 1934 annual session.

Secretary Cook moved that the minutes as published in THE JOURNAL LANCET, issue of July 15, 1934, be approved. Motion duly seconded and carried.

Reading of the minutes of the ad interum meetings of the Council.

Council Meeting—May 24, 1934
Pierre, S. Dak.

Council met at Pierre, May 24, 1934. After lunch an informal meeting was called at the Pierre Clinic to consider plans for conference with Governor Berry, as per his call.

Those present: Drs. W. G. Magee, A. S. Rider, E. A. Pittenger, J. O. F. Kraushaar, C. E. Sherwood, J. C. Shirley, B. A. Bobb, H. R. Kenaston, N. K. Hopkins, T. F. Riggs, P. D. Peabody, E. M. Young, P. R. Pinard, F. W. Minty, G. E. Trierweiler, R. B. Fleeger, M. J. Hammond, R. E. Jernstrom, J. F. D. Cook, George Campbell, George Kienholz, and others.

The men called by Governor Berry met at 2:00 p. m. in the Governor's reception room. Governor Tom Berry was introduced to the assembled M. D.'s by the Governor's secretary.

Dr. W. G. Magee responded to the introductions, and in a few remarks informed the Governor that the medical profession was anxious and willing to co-operate as outlined in F. E. R. Bulletin No. 7 with the Relief Commission for South Dakota, and were present at his request, and would be pleased to hear the Governor's plans

in the matter of Medical Care under F. E. W. Rules and Regulations, Bulletin No. 7, Medical Care to the unemployed.

Governor Tom Berry thanked the physicians for their coming to Pierre for this conference, stating that there had been some unfavorable reports as to the bills submitted by physicians. That he would request that the group present name a committee to meet with his representative, Mr. E. J. B. Longrie to formulate a program governing medical care provided in the home to recipients of unemployment relief under Bulletin No. 7.

Dr. W. G. Magee appointed Drs. T. F. Riggs, N. K. Hopkins and J. O. F. Kraushaar.

The Governor introduced Mr. E. J. B. Longrie, who would represent the Governor in the Committee, and retired. Mr. Longrie in the Chair. A round table discussion was conducted.

Dr. Magee called upon a number of the men for expressions.

Dr. Kraushaar outlined the Brown County plan of an advisory physician to the local County Director. This was discussed by Drs. E. A. Pittenger, P. D. Peabody, T. F. Riggs, B. A. Bobb, F. W. Minty and B. M. Hart. Dr. H. L. Saylor, Huron, asked that the Eye men be considered in the fee schedule.

Drs. R. B. Fleeger and N. K. Hopkins were called on and discussed the plans in their counties. Dr. Rice stated that in view of the fact that over 50 per cent of the doctors were chiselers, he moved that two state investigators be sent about the state to check the medical bills in each County. This did not meet with the approval of Mr. Longrie and was not considered.

Mr. Kienholz referred to hospitalization from Beer Revenues.

Dr. C. E. Sherwood called attention to Bulletin No. 7 which provided for an advisory committee by the Council of the State Medical Association to co-operate with the State Emergency Relief Committee. A committee was duly appointed by the Council, October 12, 1933.

Dr. Malley stated that an advisory committee would be helpful in the evaluation of certain claims in his department. That certain advisory contacts in each county would be helpful to the county Relief Directors, which would expedite the settlement of bills by the Relief Committee.

Motion to adjourn.

J. F. D. Cook, M.D.
Secretary-Treasurer.

Council Meeting—Sept. 13, 1934

Meeting called by President W. G. Magee, Huron, Sept. 13, 1934, at Marvin Hughitt Hotel for 6:30 dinner.

Members present: Drs. W. G. Magee, H. R. Kenaston, B. M. Hart, J. C. Shirley, C. E. Sherwood, M. J. Hammond, E. A. Pittenger, E. W. Jones and J. F. D. Cook.

Dr. H. R. Kenaston, chairman, presiding.

Dr. W. G. Magee reported the recent meeting at Watertown with Dr. Malley, Dr. Dyar, President of the Dental Society, and Dr. J. F. D. Cook. It was recommended that Dr. T. F. Riggs of Pierre, be appointed to the State Federal Emergency Commission, if agreeable to Governor Tom Berry, or a medical man he may choose. That hospital care and surgery (emergency) should be provided for by the commission.

BASIC SCIENCE LAW. After discussion it was thought best to defer action until further developments.

Motion by Dr. E. A. Pittenger that the President appoint a "Sub-Committee on Legislation." Dr. B. M. Hart seconded. Motion on vote prevailed. Carried.

Motion by Dr. E. A. Pittenger that the appointment of "Sub-Committee on Legislation" be deferred until after the November election, to be able to determine the best contacts. Seconded by Dr. J. C. Shirley. Carried.

Dr. C. E. Sherwood of Madison gave a report of the Physicians of Lake County in their program for immunizing and vaccination of the school children. Pay and free days were set aside and all the physicians co-operated. The State Board of Health furnished the material.

Motion by Dr. E. W. Jones, that in considering the advisability of a special Committee on Medical Economics, it is deemed unnecessary; that the constitution provides for a standing committee, such a committee has been duly constituted for the terms of years. Seconded by Pittenger. On motion, carried.

Dr. E. W. Jones, Committee on Radio Broadcasting, made a report of the committee. On motion of Dr. Pittenger, that the Raido Broadcast Committee prepare as outlined a tentative program; the set-up to be presented to the officers. Seconded by Dr. Hammond. Carried.

Motion by Dr. Sherwood, that the necessary expenditure for postage, etc., be allowed for Radio Committee for program of State Medical Association. Seconded by Dr. J. C. Shirley. Carried.

Motion to adjourn.

J. F. D. Cook, M.D.,
Secretary-Treasurer.

Council Meeting—Dec. 18, 1934
Huron, S. D.

Meeting of the Council was called, with the following members present: Drs. A. S. Rider, M. J. Hammond, C .E. Sherwood, B. M. Hart, J. C. Shirley, B. A. Bobb, N. K. Hopkins, E. W. Jones, and J. F. D. Cook, secretary, D. S. Baughman, W. F. Bushnell and W. E. Donahoe, Committee on Medical Economics, were present on invitation.

In the absence of the chairman of the Council, President-elect A. S. Rider presided.

Drs. N. K. Hopkins, E. W. Jones, T. F. Riggs and B. A. Bobb discussed the attitude of certain insurance companies furnishing workmen's compensation insurance who were not living up to the fee schedule as agreed upon and a part of the fees adopted by the legislature.

Dr. E. W. Jones gave a report on Radio Broadcast over WNAX. Proposed that the Council sponsor a program to be developed along the following lines which would be without material expense to the State Medical Association, advertising our radio broadcast.

First, the use of pharmaceutical houses who advertise the state and wholesale drug houses. Second, insurance companies like the Metropolitan and New York Life, etc. The contacting of the local druggist of the various towns who use the daily and weekly papers in running an ad, a line calling attention to the public health broadcast over WNAX every Sunday evening, 6:45 to 7:00. Physicians who carry a card in their local paper be asked to carry this additional notice of the broadcast over WNAX. This is proposed as a tentative program and the Council, on motion, authorized Dr. Jones to make such contacts and effect this program and report at a later meeting of the Council. A motion was made by Dr. B. A. Bobb and supported by Dr. B. M. Hart.

Dr. W. E. Donahoe, of Sioux Falls, in discussion of the advertising matter, stated that the druggists of Sioux Falls are running a combined ad each Friday now to counteract the chain drug store. It was suggested that Dr. Donahoe contact the local druggists of his Society, asking for their co-operation.

Report of the Committee on Medical Economics, presented by Dr. W. F. Bushnell.

As president of the Health Officers Association, Dr. Bushnell asked for the support of the State Medical Association in presenting the matter of full co-operation between the State Board of Health, State Medical Association and all lay groups dealing with the public health in South Dakota. The Council approves of this program of the Health Officers Association and is desirous of working out a program for a fuller co-operation. In lieu of this the following resolution was presented and adopted:

BE IT RESOLVED, That the best co-operation possible be given by the State Medical Association to the State Board of Health; for the purpose of bringing together these organizations for the purpose of promoting a closer association of medical men and for better relations of these organizations for the welfare of the public health.

Dr. N. K. Hopkins raised the question of the duplication of the papers for our radio broadcast. The committee anticipates that there will be a duplication and if the papers are in the hands of the committee far enough in advance of the broadcast date, such papers can be staggered so as not being given close together.

Dr. Jones proposed that we have some attorney give a talk on our legislative needs. The suggestion was considered favorably by the Council.

The state program was next considered and the outline submitted to the local committee at Pierre, was approved excepting clinic in obstetrics and gynecology. The local committee desired a pediatric clinic be given in its place. This matter was agreed upon by the Council.

The time of meeting was set for May 13, 14, 15, 1935.

Dr. Donahoe gave an invitation to the Medical Association to meet with the Sioux Valley Medical Society of Sioux Falls in January.

Report of Dr. T. F. Riggs, member of the State Committee contacting the Federal Emergency Relief Administration at Pierre, Dr. Riggs gave a verbal report of his activities before the F.E.R. Committee and State Administrator.

Dr. N. K. Hopkins presented the legal aspect of the county commissioners' duty in caring for the indigent of their county. He presented a legal opinion and referred to the law, Vol. 2, Chap. 33, Sections 5886-7-8-9, also 1920 session laws appeal from action of county commissioners in care of the indigent. On motion, Dr. Hopkins was asked to formulate such information and send to the State Secretary who was directed to mimeograph the same and forward to the members of the State Association.

Legislative Council delegated Dr. T. F. Riggs to contact the lawyer at Pierre to represent the State Medical Association during the coming session of the legislature to inform the Council and Committee on Legislation of any adverse legislation relative to public health and the practice of medicine.

Motion by Dr. E. W. Jones, seconded by Dr. J. R. Westaby that the Council meet during the recess of the legislature.

Council adjourned at 4:30.

J. F. D. Cook, M.D.,
Secretary-Treasurer.

Council Meetings—March 3, 1935
Huron, S. D.

Council met as per official notice, with the following members present: Drs. W. G. Magee, E. A. Pittenger, C. E. Sherwood, B. M. Hart, J. C. Shirley, B. A. Bobb, N. J. Nessa, H. R. Kenaston, Chas. Flett, E. W. Jones, S. M. Hohf, W. A. Bates and J. F. D. Cook.

A quorum being present, H. R. Kenaston called the meeting to order for the consideration of such matters as may come before the Council.

Dr. W. A. Bates, Delegate A. M. A., gave a report of the special meeting of the House of Delegates of the American Medical Association, February 15-16, 1935. Dr. Bates called attention to the action of the House of Delegates, relative to the report of the Reference Committee, on Sickness Insurance as covered in the Epstein Bill, also the Wagner Bill, placing the Children's Bureau in the Department of Labor.

On motion of Dr. E. W. Jones that Drs. W. A. Bates, E. A. Pittenger and J. F. D. Cook prepare resolutions to present to the United States Senators and Congressmen from South Dakota, setting forth the Association's opposition to the pending legislation relative to sickness insurance, and the Wagner Bill, where it places the Children's Bureau in the Department of Labor.

Dr. E. A. Pittenger read a letter from Dr. J. A. Myers, of Minneapolis. The Council wish to thank Dr. Myers for his timely advice.

The secretary was directed to write Mrs. H. H. Holdridge, of Madison, director of the South Dakota Public Health Association, advising her of the personnel of the State Medical Association Committee; promising her full co-operation of the State Medical Association in all public health activities. Also Mrs. Harris, of Aberdeen, president of the above organization, offering her our support.

Dr. C. E. Sherwood presented the outline of the Indiana set-up for the administration and co-operation in Public Health Programs.

Dr. S. M. Hohf reported on the radio broadcast and urged that all papers be furnished the committee well in advance—30 days at least, 60 days is better.

Dr. Jones reported on his activities regarding the advertising of the radio broadcast. The pharmaceutical houses declined to take part in this program at the present time. He plans further contacts—wholesale and retail druggists of South Dakota.

Council advised mimeographing 150 copies of each paper.

Dr. C. E. Sherwood presented for consideration the Iowa plan of post-graduate study, an extension course.

Dr. W. G. Magee reported on the program for Pierre state meeting.

Motion to adjourn.

J. F. D. Cook, M.D.,
Secretary-Treasurer.

As directed by the Council (March 3, 1935) of the South Dakota State Medical Association.

Your attention is directed to the Report of the Reference Committee of the House of Delegates of the American Medical Association. Made to the House of Delegates at the Special Session February 15-16, 1935, Chicago, Ill.

* * *

The Council of the South Dakota State Medical Association, acting for the House of Delegates ad interum by unanimous vote, supports the action of the House of Delegates of the American Medical Association at the special session of that body February 15-16, 1935, as set forth in the Report of the Reference Committee of the House of Delegates of the American Medical Association.

This report is significant in the firm stand taken to *condemn* all *efforts* at *regimentation* of the *medical profession* and *lay control* of *medical practice* as *being fatal* to *medical progress* and *tending inevitably* to *lower* the *quality* of *medical service now available* to the *American people.*

We disapprove of that provision in the Wagner Bill which places the responsibility of administration and supervision of medical services for crippled children and preservation of child and maternal health in the Children's Bureau of the Department of Labor.

We condemn that section of the Wagner Bill which creates a social insurance board without specification of the character of its personnel to administer functions not only old age pensions, unemployment and other forms of insurance now contemplated, but also health insurance.

We disapprove and are opposed to compulsory sickness insurance whether administered by the Federal Government, governments of individual states, or by any industry, community or similar body.

The Epstein Bill in its proposals apparently

studied and carefully designed to prevent the medical profession from having any voice in the management of medical service.

Summary

1. We condemn regimentation and lay control of medical practice.

2. Opposed to all forms of compulsory sickness insurance administered by governments or industry.

3. Deprecates federal medical relief administered and controlled by lay boards.

4. Condemns the social insurance board of the proposed Wagner Bill which fails to specify the character of the personnel to administer functions essentially medical in character.

5. Condemn the Epstein Bill of the American Association for Social Security, as deceptive, dangerous and demoralizing.

6. We assert there is no model plan which is a curative for economic ills any more than there is a panacea for physical ills.

7. We assert that the public welfare must be protected by safeguarding to the medical profession the functions of control of medical standards.

Report of secretary-treasurer. (See financial report, first session House of Delegates.)

The Council, acting for the House of Delegates, dispatched to the President of the United States, the honorable members of Congress, and the Committee on Economic Security, a unanimous report explaining why the South Dakota State Medical Association is opposed to the proposed health insurance program, and asserting that there is no model plan which is a panacea for economic ills.

President Magee appointed as the Auditing Committee on the secretary's report Drs. A. E. Johnson, H. B. Martin and C. E. Sherwood.

Dr. E. A. Pittenger, a member of the South Dakota Planning Board, gave a verbal report on the public welfare work co-operating through the State Board of Health.

Dr. Pittenger moved, supported by Dr. J. C. Shirley, that Dr. B. A. Dyar, of De Smet, be appointed executive secretary of the South Dakota State Medical Association at a salary of $600.00 per year to act in compliance with the Rules and Regulations of the Council of the State Medical Association. Motion carried.

Dr. E. W. Jones moved that the president, president-elect and vice-president constitute a committee to designate the official duties of Dr. Dyar. Motion duly seconded and carried.

Dr. E. W. Jones moved that the president appoint a committee of three to make a report to the Council before this meeting adjourns revising the dues upward. Motion supported by Dr. Pittenger, and carried.

President Magee appointed Drs. E. W. Jones, W. A. Bates and D. S. Baughman.

Dr. J. C. Shirley moved, supported by Dr. Rider, that resolutions be adopted thanking the Governor for his support of the medical profession in the medical relief administration. Motion carried. (See resolutions of the Report of the Committee on Resolutions and Memorials.)

Dr. S. M. Hohf gave his report of the Broadcasting Committee. (See report, first session House of Delegates.) This report was duly accepted and referred to the committee on resolutions.

A resolution was adopted thanking the Advisory Committee, consisting of Drs. B. A. Dyar, T. F. Riggs and J. O. F. Kraushaar, for their co-operation with the Federal Emergency Relief in behalf of the medical profession and the relief administration.

Dr. J. C. Shirley presented a resolution from the South Dakota Hospital Association relative to a proposed program for post-graduate nurses' training. The matter was fully discussed, and on vote a resolution was tabled for further information, desiring a more specific outline of the program proposed.

Meeting adjourned.

J. F. D. Cook, M.D.,
Secretary-Treasurer.

SECOND SESSION OF HOUSE OF DELEGATES

Wednesday, May 15, 1935, St. Charles Hotel. Breakfast, 7:00 A. M.

Meeting called to order by Dr. A. S. Rider, president.

On roll call the following members were present: Drs. W. G. Magee, A. S. Rider, J. L. Stewart, E. A. Pittenger, J. F. D. Cook, M. J. Hammond, C. E. Sherwood, B. M. Hart, N. J. Nessa, S. M. Hohf, R. B. Fleeger, H. R. Kenaston, N. K. Hopkins, Chas. Flett, E. W. Jones, J. O. F. Kraushaar, W. A. Bates, A. E. Johnson, D. S. Baughman, H. B. Martin, E. M. Young, W. J. Maytum, M. A. Stern, R. G. Stevens, E. C. and B. A. Dyar.

Quorum present.

Minutes of the first meeting of the House of Delegates were read and approved.

Secretary Cook at this time expressed his apology to Dr. W. A. Bates for failure to call for his report as delegate to the regular and special sessions of the American Medical Association.

This report should have been presented at the first meeting of the House of Delegates. Dr. Bates read his report as follows:

REPORT OF DR. W. A. BATES, DELEGATE TO THE A. M. A.

Special Session 1935

Report of the House of Delegates of the American Medical Association at Cleveland, June 11, 1934, and also of the special session held at Chicago, February 15, 1935.

Many subjects were discussed and either accepted or rejected at this meeting, but time will only admit of a report of some of the major resolutions acted upon during these meetings. The number of doctors listed in the last edition of the A. M. A. directory was 159,050. The number of Fellows of the A. M. A. was 60,714.

Considering some of the major subjects which were acted upon at the Cleveland meeting, the compulsory sickness insurance part of the Wagner-Lewis Bill which has been before Congress this year, and the Epstein Bill, which was introduced in all of the State Legislatures of this country, was the most important.

Statement of the Board of Trustees on Health Insurance, Dr. J. H. Upham, chairman: Since 1912, when the British government, through the action initiated by Lloyd George, established a system of compulsory health insurance, this problem has been prominently before the House of Delegates and other official bodies of the American Medical Association. As early as 1916 the House of Delegates requested the Board of Trustees to undertake an investigation of social insurance in all its forms and to make suitable report to the House. The subject has been raised from time to time since that date. On every occasion on which the House of Delegates has officially considered the questions of compulsory health insurance and social insurance, as well as the entrance of the state into medical practice, it has reaffirmed the independence of medicine as a profession and it has always condemned any system whereby the state would in any way enter into the practice of medicine. In 1920 following the report of the committee appointed to study compulsory health insurance, the House of Delegates adopted a resolution strongly condemning all forms of compulsory health insurance. It is a well-known fact that voluntary insurance has always been the forerunner of compulsory insurance and even the most ardent advocates of voluntary insurance admit that fact. The action of that House of Delegates has not been rescinded by any subsequent action taken by the House of Delegates.

As far as state medicine is concerned, the House of Delegates in 1921 adopted a resolution approving and endorsing all activities and policies of the states directed to the prevention of disease, but opposing the state treatment of disease except for the delinquent and the defective. Again in 1922, the Association declared its opposition to all forms of state medicine because of the ultimate harm that would come thereby to the public weal through such form of medical practice.

The Judicial Council of the Association has repeatedly brought reports to this House of Delegates sustaining the same point of view, and all these reports of the Judicial Council have been accepted and approved by the House of Delegates.

Finally, last year the House of Delegates unanimously approved in principle the Minority Report of the Committee on the Costs of Medical Care, and urged that the Board of Trustees of the American Medical Association in co-operation with its constituent bodies conduct an intensive campaign to disseminate this point of view among the medical profession and the public, with a view to the maintenance of high ethical standards and the preservation of professional ideals.

Your Board of Trustees, your executives and all of the publications of this Association have done their utmost thus far to carry out the policies which you have established. Today we are confronted with an extraordinary situation of the utmost importance to the health and welfare of the American people and to the American medical profession. It is no secret that a considerable number of foreign nations have already established state systems of medical care and that an intensive campaign has been carried on in this country for many years, led by philanthropists, social workers, economists and various foundations, to cause the American medical profession and the American people to accept a similar type of medical practice. In accordance with the mandate of this House of Delegates, all of the facilities of the American Medical Association have been used to oppose this trend and the propaganda in support of it, which has been widely circulated and for which vast sums of money have been, and are being, expended by various interested parties. It is also now well known that the President of the United States, in a recent message, has come forth for the principle of social insurance, with special reference to old age pensions and unemployment insurance.

Your committee does not recommend any, but has abstracted from the pamphlet the following principles and suggests that they be followed by all constituent bodies of the American Medical

Association as bases for the conduct of any social experiments that may be contemplated by them:

First: All features of medical service in any method of medical practice should be under the control of the medical profession. No other body or individual is legally or educationally equipped to exercise such control.

Second: No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of medical service must be borne by the profession.

Third: Patients must have absolute freedom to choose a legally qualified doctor of medicine who will serve them from among all those qualified to practice and who are willing to give service.

Fourth: The method of giving the service must retain a permanent, confidential relation between the patient and a "family physician." This relation must be the fundamental and dominating feature of any system.

Fifth: All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service should be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

Sixth: However the cost of medical service may be distributed, the immediate cost should be borne by the patient if able to pay at the time the service is rendered.

Seventh: Medical service must have no connection with any cash benefits.

Eighth: Any form of medical service should include within its scope all legally qualified doctors of medicine of the locality covered by its operation who wish to give service under the conditions established.

Ninth: Systems for the relief of low income classes should be limited strictly to those below the "comfort level" standard of incomes.

Tenth: There should be no restrictions on treatment or prescribing not formulated and enforced by the organized medical profession.

If it is determined in a community that some experiment to change or improve the method of administering medical service is desirable, observance of these principles will remove many of the "disturbing influences" from such an experiment. In all such experiments, attention must be sharply focused on the quality of medical service.

Such restrictions will undoubtedly lower the enthusiasm of many of the present advocates of such schemes. They remove the interest of the politician, the commercial promoter and all those who consciously or unconsciously are seeking to achieve other objectives than better medical care for those unable to provide such care for themselves under present conditions. All these principles are directed toward protecting the character of the service to be given and all are directly designed to guard against abuses which experience shows are bound to arise when these principles are neglected. In most communities it will be found that comparatively few changes in the methods of administering medical care will be necessary. That type of medical practice which preserves the personal relationships between physician and patient, that maintains the practice of medicine as a profession, and that has withstood the test of centuries must be preserved for the best interests of both the public and the medical profession.

From report of Bureau of Economics:

A historical sketch shows the social origins of insurance and traces the process by which a system organized primarily for cash relief became a system of medical service, while setting up institutions in no way suited to operate such a service. This development influences all present proposals for insurance. Systems of insurance became political instruments for the purchase of votes through increased benefits, with little regard to medical necessities.

There is considerable discussion backed by thorough documentation of the way in which sickness insurance increases the "morbidity" as measured by cash payments for days of labor lost. The evidence is furnished from neurologists and psychiatrists in insurance countries as to the tendency of insurance to create neuroses. It is also shown that the medical service tends to become perfunctory and to cause increased medication and excessive use of such treatment as can be given mechanically, and to excessive hospital service.

When a system has continued long enough for the insured to have paid considerable sums, it is shown that there arises a general desire on their part to "get their money back," which greatly increases the demand for unnecessary medical service and causes a conflict between the insured, the physicians and the administrators of insurance systems which makes any scientific diagnosis and treatment difficult. This attitude is aggravated by

the desire to obtain cash benefits, but it extends also to dependents who receive no cash.

There is an elaborate tabulation of the different medical forms of insurance in the various countries, which makes clear at almost a glance just what is the character and the extent of the medical service given in all leading insurance countries. There is no definite conclusion for or against insurance further than to make it clear that existing systems of insurance have failed to solve the problem of medical care for the people and have brought a great many evils along with some benefits. The question is raised and evidence cited to indicate that the huge sums necessary for insurance might be expended in other forms of health care with much greater effect. A large number of recent writers are cited to show that there is widespread movement in insurance countries to substitute for sickness insurance some form of compulsory saving with payment of an immediate sum for their medical services and the return of a portion of unused savings for insurance needs.

The question of the practicability of the insurance method in supplying medical care is discussed, and it is shown by documented evidence that insurance has nowhere reduced morbidity, that no actual basis has ever been set up that has not been proved defective, and that the vast sums required for insurance and the dominance of such systems in the political social life of a country tends to focus attention on insurance to the exclusion of other forms of effort and, therefore, indicates that it is not the most effective method of meeting the problems of medical care for the mass of the people.

The Epstein Bill:

It is proposed in this bill, sponsored by the American Association for Social Security, to establish by state legislative action a closely interlocked system of compulsory sickness insurance.

General Comment: There is throughout the proposed law an apparently studied and carefully developed design to prevent the medical profession having any voice in the management of medical service. In this respect it rejects the lessons of the British, French and Scandinavian systems. It is generally admitted these are by far the most desirable of existing systems and that their superiority is due to the large share which the medical associations have in their management. This proposed law is, therefore, a throwback to elements that have already been rejected in the more recent and best systems.

There is also the deliberate effort, already mentioned, to split the medical profession and thereby weaken its power by isolating the insurance practitioners from the general body of the profession. It seems a fair conclusion that the enactment of this law would completely abolish private practice in urban districts since the trifling minority of the population which would not be forcibly included in the compulsory scheme or driven into the voluntary one, would be entirely too few to support any practitioners.

There are few provisions to guarantee the character of the service, although this is the weakest point in all systems of insurance. Almost the only power that has been found capable of maintaining any sort of standards in existing systems has been the discipline enforced by national and local medical associations. There is a deliberate effort throughout this proposed law to destroy any such discipline or influence. This is done at a time when there is a general acceptance of the fact that standards in industry can be best maintained through the use of trade and professional associations. Yet the oldest professional association, and the one that has an unequalled record of success in establishing and maintaining such standards of medical service is in this scheme deliberately excluded from all share in determining and maintaining such medical standards under insurance.

For the tested method of professional control this plan would substitute a sort of gang foreman called a "local medical manager." This manager is selected and controlled by, and owes complete allegiance to the lay manager of the scheme. His principal interest, and the interests of his superiors would be in controlling cash expenditures through certification for benefits. Experience in many systems had shown that any such supervisor, with such duties constantly in a state of antagonism to the physicians who give the service. However, no existing system has ever suggested the creation of quite as bad a situation in relation of such a supervision as this plan proposes.

This "medical manager" is to settle all complaints against the physicians and "to supervise and examine into the services rendered by all persons and agencies furnishing the medical benefits." This clause makes this manager a sort of superphysician boss, and gives him power to "supervise" the work of the practicing physician. It is introducing factory methods into the practice of medicine and removing responsibility from the practicing physician to an extent never previously proposed.

The lay employers of this "medical manager" have the power to remove any physician from insurance practice, in other words to "fire" him and deprive him of the right to practice his profession

in the only field of practice which will exist if this measure becomes a law. Unless all lessons of experience are false, such a system would destroy most of the elements essential to rendering a good medical service.

Report of the Reference Committee, Special Session House of Delegates, American Medical Association

February 15 and 16, 1935

Your Reference Committee, believing that regimentation of the medical profession and lay control of medical practice will be fatal to medical progress and inevitably lower the quality of medical service now available to the American people, condemns unreservedly all propaganda, legislation or political manipulation leading to these ends.

Your Reference Committee has given careful consideration to the record by the Board of Trustees of the previous actions of this House of Delegates concerning sickness insurance and organized medical care and to the account of the measures taken by the Board of Trustees and the officials of the Association to present this point of view to the government and to the people.

The American Medical Association, embracing in its membership some 100,000 of the physicians of the United States, is by far the largest medical organization in this country. The House of Delegates would point out that the American Medical Association is the only medical organization open to all reputable physicians and established on truly democratic principles, and that this House of Delegates, as constituted, is the only body truly representative of the medical profession.

The House of Delegates commends the Board of Trustees and the officers of the Association for their efforts in presenting correctly, maintaining and promoting the policies and principles, heretofore established by this body.

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, the preservation of their health and their care in sickness, the advancement of medical science, the improvement of medical care, and the provision of adequate medical service to all the people. These physicians are the only body in the United States qualified by experience and training to guide and suitably control plans for the provision of medical care. The fact that the quality of medical service to the people of the United States today is better than that of any other country in the world is evidence of the extent to which the American medical profession has fulfilled its obligations.

The House of Delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the Federal government, the governments of the individual states or by any individual industry, community or similar body. It reaffirms, also, its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all of the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness.

The medical profession has given of its utmost to the American people, not only in this but in every previous emergency. It has never required compulsion but has always volunteered its services in anticipation of their need.

The Committee on Economic Security, appointed by the President of the United States, presented in a preliminary report to Congress on January 17, eleven principles which that committee considered fundamental to a proposed plan of compulsory health insurance. The House of Delegates is glad to recognize that some of the fundamental considerations for an adequate, reliable and safe medical service established by the medical profession through years of experience in medical practice are found by the committee to be essential to its own plans.

However, so many inconsistencies and incompatabilities are apparent in the report of the President's Committee on Economic Security thus far presented that many more facts and details are necessary for a proper consideration.

The House of Delegates recognizes the necessity under conditions emergency for federal aid in meeting basic needs of the indigent; it deprecates, however, and provision whereby federal subsidies for medical services are administered and controlled by a lay bureau. While the desirability of adequate medical service for crippled children and for the preservation of child and maternal health is beyond question, the House of Delegates deplores and protests those sections of the Wagner Bill which place in the Children's Bureau of the Department of Labor the responsibility for the administration of funds for these purposes.

The House of Delegates condemns as pernicious that section of the Wagner Bill which creates a social insurance board without specification of the character of its personnel to administer functions essentially medical in character and demanding technical knowledge not available to those without medical training.

The so-called Epstein Bill, proposed by the

American Association for Social Security now being promoted with propaganda in the individual states, is a vicious, deceptive, dangerous and demoralizing measure. An analysis of this proposed law has been published by the American Medical Association. It introduces such hazardous principles as multiple taxation, inordinate costs, extravagant administration and an inevitable trend toward social and financial bankruptcy.

The committee has studied this matter from a broad standpoint, considering many plans submitted by the Bureau of Medical Economics as well as those conveyed in resolutions from the floor of the House of Delegates. It reiterates the fact that there is no model plan which is a cure-all for the social ills any more than there is a panacea for the physical ills that affect mankind. There are now more than 150 plans for medical service undergoing study and trial in various communities in the United States. Your Bureau of Medical Economics has studied these plans and is now ready and willing to advise medical societies in the creation and operation of such plans. The plans developed by the Bureau of Medical Economics will serve the people of the community in the prevention of disease, the maintenance of health and with curative care in illness. They must at the same time meet apparent economic factors and protect the public welfare by safeguarding to the medical profession the functions of control of medical standards and the continued advancement of medical educational requirements. They must not destroy that initiative which is vital to the highest type of medical service.

In the establishment of all such plans, county medical societies must be guided by the ten fundamental principles adopted by this House of Delegates at the annual session in June, 1934. The House of Delegates would again emphasize particularly the necessity for separate provision for hospital facilities and the physician's services. Payment for medical service, whether by prepayment plans, installment purchase or so-called voluntary hospital insurance plans, must hold, as absolutely distinct, remuneration for hospital care on the one hand and the individual, personal, scientific ministrations of the physician on the other.

Your Reference Committee suggests that the Board of Trustees request the Bureau of Medical Economics to study further the plans now existing and such as may develop, with special reference to the way in which they meet the needs of their communities, to the costs of operation, to the quality of service rendered, the effects of such service on the medical profession, the applicability to rural, village, urban and industrial population, and to develop for presentation at the meeting of the American Medical Association in June model skeleton plans adapted to the needs of populations of various types.

Dr. Harry H. Wilson, California,
Chairman,
Dr. Warren F. Draper, Viriginia,
Dr. E. F. Cody, Massachusetts,
Dr. E. H. Carey, Texas,
Dr. N. B. Van Etten, New York,
Dr. F. S. Crockett, Indiana,
Dr. W. F. Braasch, Minnesota.

The action of the House of Delegates of the American Medical Association in reaffirming its opposition to proposed compulsory sickness insurance plans has had a far-reaching effect. Delegates and officers of the state associations have conveyed the spirit of the deliberations and action of the House to their respective organizations in a manner which has been especially gratifying. Many state and county medical societies have taken action opposing sickness insurance and have made their action known to the President, Bureau heads and members of Congress. It is reported from Washington that the medical profession has never before made its united position known to legislators in such an impressive manner. The indisputable evidence presented, indicating that the best interests of the public would not be served by proposed sickness insurance plans, must command the respect of those who will be responsible if any legislation is enacted.

Much has been accomplished since the House of Delegates in 1934 authorized the Board of Trustees to proceed with a program of direct approach to the lay-public in discussion of sickness insurance. Large and influential groups have been contacted and much more is known of the extent of public interest and the attitude toward sickness insurance, however, that there remains one phase of this program which must be more actively carried on.

The interest and activity of the individual physician must be aroused to the degree that he will inform himself concerning sickness insurance, and present such information to the lay-public which he contacts. In this way he will aid greatly in crystallizing public opinion against harmful legislation.

Reports to the committee indicate that the individual citizen of influence, who has been misled by public statements that needed medical care is not available to those financially less fortunate,

has, from radio talks, magazine articles, and other propaganda, come to believe that sickness insurance is desirable. The best interests of the patient and the best interests of the physician are common, and it is not inconsistent with the ethical teaching of medicine for the physician to advise with him concerning sickness insurance. No special technique is needed in making individual lay-contacts. The physician is generally not without some ingenuity in matters of local interest. If he is opposed to some local project he does not hesitate to approach others in order to impress upon them the undesirable character of the proposal or to enlist their assistance in defeating it. Certainly there could be nothing of more vital importance than the threatened measures. Efforts must now be put forth to arouse the individual physician to interest in his own position and to his responsibility to others.

No one knows better the underlying essentials to efficient medical practice than members of the medical profession in promoting the best interests of all parties concerned. The medical profession of South Dakota should be united in support of these principles.

W. A. Bates, M.D.

The above report was duly accepted and ordered published.

Committee report on Amendment to Constitution and By-Laws as follows:

"In consideration of the similarity and overlapping of functions and activities of several committees such as the Committee on Cancer, Committee on Hygiene, and such special committees as the Advisory Committee co-operating with the State Board of Health, the Advisory Committee co-operating with the South Dakota Public Health Association, it is respectfully recommended to the House of Delegates that Article, Chapter VII be amended to co-ordinate all such allied activities under one committee to be designated as: Committee on Public Health."

J. C. Ohlmacher, M.D., *Chairman,*
R. B. Fleeger, M.D.,
N. K. Hopkins, M.D.

The report of the Committee on Amendments was duly adopted.

Report of the Committee on Resolutions and Memorials.

Report of Committee On Resolutions and Memorials

Be It Resolved, That the South Dakota State Medical Association feels deeply the loss of its members, as cited by the Committee on Necrology, and furthermore,

Be It Resolved, That this Association wishes to express to the widows and families of our departed brethren our sincere sympathy in their bereavement, and your Committee requests the Secretary of this body to so inform each family and also requests that this resolution be spread upon the minutes of this Association.

Be It Resolved, That the South Dakota State Medical Association in convention assembled feel duly grateful to the Fourth District Medical Society for the splendid Scientific Programme and gracious hospitality and wish to express to them their sincere appreciation of their efforts to make this convention an outstanding success.

Be It Resolved, That this Association commend most heartily the accomplishments of the Radio Broadcasting Committee, the excellent work of Dr. S. M. Hohf in the able and pleasing manner in which he has conducted the weekly broadcasts and the members of the component districts who have furnished the interesting and timely papers, and furthermore

Be It Resolved, That this Association wishes to express its sincere appreciation to The House of Gurney for its courtesy in making available the facilities of Station WNAX at Yankton for these medical broadcasts and your Committee requests that the Secretary of this Association inform The House of Gurney of our appreciation and emphasize the inestimable value of the service they are rendering the public, and furthermore

Be It Resolved, That your Committee recommends the continuance of this educational Radio Broadcasting programme.

Be It Resolved, That the custom in some sections of the state of County Commissioners appointing certain physicians as county physicians to relieve said County Commissioners of the responsibility of providing adequate and proper care of the indigent be condemned as being unfair to the other physicians of said counties who of necessity must do the bulk of this work regardless of the existence or non-existence of a county physician be permitted to serve the indigent at a reasonable rate, and furthermore

Be It Resolved, That this Association heartily endorse and commend the action of the State Medical Advisory Committee in reference to contract county physicians.

Be It Resolved, That the Committee on Public Health combine the following:

1. Hygiene and Mental Health.
2. Advisory-Co-operating with the State Board of Health.
3. Advisory-Co-operating with the National Tuberculosis Association and South Dakota Public Health Association. and furthermore

Be It Resolved, That the Committee on Public Health consist of at least ten members one of whom shall act as general Chairman and under whom shall be three Sub-Chairmen, one for each division. It is desirable that the personnel of this committee be well distributed throughout the entire state.

Be It Resolved, That the Committee on Cancer be congratulated on the success of their efforts during the past year as indicated in their report and your Committee recommends and strongly advises the continuation and expansion of this work during the coming year and feels that among other things each component district should devote one entire meeting to some phase of the cancer problem.

Be It Resolved, That this Association commend the Committee on Medical Economics and take immediate action to put into operation the recommendations set forth in their report. Your Committee feels that a very important step has already been taken in the appointment of Dr. Dyar as Executive Secretary and recommends that he be given the necessary authority to proceed with the co-operation and assistance of the Economic Committee and effect a working coordination of all agencies concerned with medical affairs and bring all such agencies under the control and direction of the State Medical Association.

Be It Resolved, That this Association desires to express its appreciation to his Excellency, Governor Tom Berry for his co-operation in the past and his promise of whole hearted support in the future.

Be It Resolved, That this Association express its appreciation to Mayor Hipple and the City of Pierre for their cordial hospitality and convenient accommodations.

Be It Resolved, That this Association wishes to express its thanks and appreciation to the Ladies Auxiliary for their splendid co-operation and assistance and extends congratulations to them on their Silver Anniversary.

D. S. Baughman, M.D.
B. A. Dyar, M.D.
E. W. Jones, M.D.

The Reference Committee on Committee Reports begs to report that the following reports be adopted: Scientific Work, Public Policy and Legislation, Medical Education and Hospitals, Medical Economics, Hygiene and Mental Health, Cancer, Necrology, Radio Broadcasting, Advisory Committee Co-operating with State Board of Health and Editorial Committee of The Journal-Lancet.

Report of Auditing Committee

Dr. C. E. Sherwood reported that the committee had audited the books of the Secretary-Treasurer and approved the same. Report accepted and approved.

Report of Committee On Dues

Dr. E. W. Jones moved and Dr. D. S. Baughman seconded, that dues be placed at $10.00 as formerly. On vote this motion lost. Dr. E. W. Jones moved, seconded by Baughman, that the Secretary be empowered to assess each member of the Association $2.00 if the money is needed. On vote this motion carried.

Dr. C. E. Sherwood, moved, seconded by Dr. W. A. Bates, that the officers of each component society be instructed to make a personal survey and campaign interviewing every non-member who is eligible in his district within the next month, making an endeavor to have him join the district society. Motion carried.

Report of Committee On Nominations and Place of Meeting

Dr. Bates reported the following:

President Elect: Dr. J. L. Stewart, Dr. E. W. Jones.

Vice-president: Dr. E. A. Pittenger, Dr. N. K. Hopkins.

Councilors: First District, Dr. W. A. Bates; Second District, Dr. M. J. Hammond; Fourth District, Dr. B. M. Hart; Eighth District, Dr. S. M. Hohf.

A vote was cast by ballot and the following were elected:

President—Dr. J. L. Stewart.

Vice-president—Dr. E. A. Pittenger.

A unanimous ballot was cast for the above named Councilors.

Place of Meeting: Sioux Falls, South Dakota.

Dr. B. A. Dyar moved, and duly seconded, that the President appoint two medical men to represent the Association with the Allied Group. Carried.

Dr. Rider stated he would make this appointment later.

New business. None.

Motion to adjourn.

Respectfully submitted,
J. F. D. Cook, M.D.,
Secretary-Treasurer.

BOOK NOTICE

A NEW WORK BY CHIDECKEL

Female Sex Perversion, by MAURICE CHIDECKEL, M.D., with a foreword by S. WOLMAN, M.D., associate in medicine in the Johns Hopkins University School of Medicine; first edition, privately printed, heavy cloth, 324 pages and index, illustrated; New York: The Eugenics Publishing Company, Inc.: 1935. Price, $6.00.

Dr. MAURICE CHIDECKEL of Baltimore, who has already attained to some fame through the publication of his *Behind the Screen,* has made use of the same technique of presentation in *Female Sex Perversion.* The technique consists of offering sharp, brilliantly-etched flashes of scenes or pictures, bound together in some manner of continuity by the author's bland philosophizing and circumlocutory observations. Such a technique was a pleasing and felicitous method of treatment in *Behind the Screen;* its results are not so sanguine in *Female Sex Perversion.*

The difference in subject matter is what causes the trouble. A sexological work, ideally, should be carefully annotated, cross-indexed, and should present acceptable referential footnotes. Dr. CHIDECKEL, in this work, has seen fit to dispense with these indispensable symbols of the scientific mind. Yet a sexological work, to be credible to the medical profession, should possess them above almost anything else.

The work is charmingly-written, and contains several bizarre illustrations. But one may hazard the wish that Dr. CHIDECKEL had proceeded with more concern for the scientific approach to the problems outlined within the work.

A POWERFUL PSYCHOLOGICAL WORK

The Loom of Justice, by ERNST LOTHAR, translated by WILLA and EDWIN MUIR; first edition, cloth, 312 pages; New York: G. P. Putnam's Sons: 1935. Price, $2.50.

It is not often that a novelist selects such an esoteric ramification of medical practice as is contained in the *leit motif* of this novel. The question posed by Novelist ERNST LOTHAR can be phrased in a single sentence: has one individual, from a purely humanitarian viewpoint, the moral right to take the life of another individual who is suffering from a hopelessly incurable disease?

Herr HAUSHOFER, a Viennese judge of no great power of mind, learns that this wife, PAULINE, is suffering from advanced carcinoma of the uterus with metastasis. A prudish sense of modesty had inhibited her natural impulse to seek medical care, with the inevitable decree of "hopeless case." Herr HAUSHOFER thereupon decides upon a double suicide: PAULINE swallows an overdose of veronal; he does likewise. But the overdose does not kill him.

The rest of the work is given over to the trial of Herr HAUSHOFER for the murder of his wife, and his reactions to the tragic spin of the wheel that Fate has dealt him. It is a powerful situation, ably handled by LOTHAR; and while his thesis is untenable from a medical standpoint, the book will be intensely interesting to physicians who read it.

OSLER'S "PRINCIPLES" RESET & REVISED

The Principles and Practice of Medicine, by Sir WILLIAM OSLER, M.D., F.R.S., late Regius Professor of Medicine in the Oxford University and Honorary Professor of Medicine in the Johns Hopkins University; and THOMAS McCRAE, M.D., F.R.C.S., professor of medicine in the Jefferson Medical College; 12th edition, heavy red cloth, gold-stamped, 1,245 pages with many charts and illustrations; New York: The D. Appleton-Century Company: 1935. Price, $8.50.

It may be said of this book what can be said of very few others: that it is the one medical work which every physician hopes one day to possess. Time has not altered nor custom deprecated the principles which OSLER originally expounded in the first edition of this historic *Principles & Practice of Medicine.* It has come to occupy the position in medicine that is assumed by BLACKSTONE in jurisprudence.

This edition, published only this June, is a delight. The text has been completely reset in Bodoni Book, and the plates are new. The revision is extensive, and, as in the case of every previous edition, is the work of one man, THOMAS McCRAE, M.B., M.D., Sc.D., professor of medicine in the Jefferson Medical College in Philadelphia.

So thorough and competent has been the work of Professor McCRAE that the spirit of OSLER is preserved on nearly every page; yet the text as it now stands is meticulously modern and attuned to the latest findings in medicine and medical practice in all the specialties considered herein.

This is a superb work, and need no superfluous commendation here to augment its undoubted success. The publishers, however, stand deserving of felicitations for producing OSLER so well and so carefully in modern dress.

A NEW SHORT TEXT ON PULMONARY DISEASES

Diseases of the Chest, by J. ARTHUR MYERS, M.S., Ph.D., M.D., edited by MORRIS FISHBEIN, M.D.; first edition, 365 pages, 61 figures; red cloth, gold stamped; New York City: The National Medical Book Company-Doubleday, Doran & Company, Inc.: 1935. Price, $3.00.

In this book the author presents in a logical and concise manner the salient facts regarding all the common pulmonary diseases. For those interested exclusively in chest diseases, it is an instructive and enjoyable résumé of the most pertinent literature. To the general practitioner, it reveals all of the latest developments in diagnosis and treatment of chest diseases encountered in practice. It is so written that it should hold a strong appeal to the lay intelligentsia.

Throughout the first half of the book, one is given a panorama of the present-day tuberculosis problem. From the pathogenesis of the disease one is led to its diagnosis. Then follows, a dissertation on primary infection, acute forms of tuberculosis, the adult destructive type, and the various treatments used. Everywhere in these chapters technical medical advancements are described so that at first the reader feels he is being given only a superficial glance. However, after more critical analysis, it becomes apparent that the latest trends of therapeusis and medical concepts have been accurately portrayed.

Another feature of the work is the vision and foresight of the author in tuberculosis-control. He sees past the individual case, into the broader field of ultimate eradication of all human tuberculosis. His experiences at Lymanhurst School have pointed the way to treatment of first infection cases in the home, provided the source of infection is eliminated from the environment, rather than to the building of additional expensive preventoria. One thus senses that the problem is not only the individual case but its communicability; and that each case has its greatest significance in its potentiality of spreading tuberculosis. In brief, it is the author's translation of each medical advancement into usefulness in the field of epidemiology that is one of the most noteworthy features.

In the second half of the volume, starting with the pneumonias, all of the more frequent and most of the rare forms of pulmonary diseases other than tuberculosis are considered. In recent years, as pointed out by the author, improvement in the mortality rate of pneumonia has been secured by specific serum therapy dependent upon correct typing of the causative organisms. In addition to the value which the practicing physician will find in the chapter on pneumonia, that realized in the concise description of the treatment of asthma is equally great. Here are answered frequently recurring problems regarding determination of sensitivity and its various forms of treatment. Particularly interesting, though of less clinical significance, are the discussions of silicosis and the other inhalation diseases.

As a whole the book fulfills a definite purpose. For the general practitioner it is the answer to a demand for a ready, brief and pointed reference regarding pulmonary diseases. Among certain groups of the lay public, it provides the proper medium for clearer understanding of pulmonary diseases and the measures which should be used in their prevention.

EDWIN J. SIMONS, M.D.,
Ah-Gwah-Ching, Minn.

SEVENTH EDITION OF PARSONS' *DISEASES OF THE EYE*

Diseases of the Eye, by SIR JOHN HERBERT PARSONS, C.B.E., D.Sc., F.R.C.S., F.R.S.; seventh edition, red cloth, gold stamped, 654 pages plus appendix and index, 21 plates and 353 text figures; New York: The Macmillan Company: 1934. Price, $5.50.

The eye is one particular organ of the human machine regarding whose physiology great strides forward have been made during comparatively recent years. It is the opinion of at least one prominent ophthalmologist that a text written fifteen years ago would be insufficient insofar as its treatment of the physiology of the eye is concerned.

These recent advances are what led SIR JOHN HERBERT PARSONS, the eminent consulting surgeon to the Royal London Ophthalmic Hospital, to revise his already well-known text, *Diseases of the Eye.* Originally published in 1907, this latest edition of the work is the seventh, indicating its widespread acceptance during the years.

Much of the text is entirely rewritten, there are new and very fine illustrations, and Chapter II, dealing with the physiology of the eye, is a completely new job. The color illustrations are sharp and clear. Chapter XXIV, concerned with errors of refraction, is particularly valuable.

The work may be recommended to both students and established practitioners without reservation.

A CANADIAN WORK ON BIOCHEMISTRY

The Biochemistry of Medicine, by ALEXANDER T. CAMERON, M.A., B.Sc., D.Sc., and C. R. GILMOUR; cloth, 518 pages, first edition; Baltimore: William Wood & Company: 1935. Price, $6.00.

Had a medical RIP VAN WINKLE fallen asleep in 1915, he would upon awakening today find much of our medical literature almost incomprehensible. The remarkable developments in recent years in the field of biochemistry have become so thoroughly integrated into every phase of medicine that one who has failed to keep pace with them finds himself utterly unable to speak the same language as the more recent graduates of medical colleges.

It is, therefore, a pleasure to find a book which compactly and concisely explains all the significant advances in biochemistry as it is related to medicine. The numerous discoveries of the abnormalities of various metabolic processes, and the effect of the secretions of the endocrine glands on the bodily functions in health and disease—all find their interpretation in the tests and formulae which make biochemistry, once merely the bane of the struggling undergraduate and the avocation of the research worker, now a vital portion of the practicing physician's armamentarium.

CAMERON and GILMOUR have complied a volume which should be placed next to OSLER in every medical library. It cites, briefly yet adequately, all the important advances in the normal and abnormal chemistry of the human body. A complete bibliography cites references for the reader who would consult the original sources.

DR. CAMERON is professor of biochemistry on the Faculty of Medicine in the University of Manitoba (Winnipeg), and is a past president of the Canadian Institute of Chemistry.

THOMAS MYERS, M.D.,
St. Paul, Minn.

The JOURNAL LANCET

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MINNESOTA, NORTH DAKOTA, SOUTH DAKOTA and MONTANA

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South Dakota State Medical Association
Montana State Medical Association
The Hennepin County Medical Society
The Minnesota Academy of Medicine
The Sioux Valley Medical Association
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MINNEAPOLIS, MINN., OCTOBER 1, 1935

A COMMENDABLE STEP

The action of the South Dakota State Board of Health in requiring annual examination of our school teachers for tuberculosis is to be greatly commended. It represents a useful step towards better control of tuberculosis in South Dakota. The measures taken to put the regulation in force have been somewhat unfortunate. There has been a lack of coöperation among the groups concerned. Such coöperation has been one of the major objectives of our State Medical Association. The outcome furnishes a useful example of the need. Information was spread by means of the superintendents of schools. Physicians were not prepared for the work. Teachers were not educated to appreciate the need. There has been no uniformity as to fees. There has been no standard technique for the examinations. Different doctors have used various methods. The State Laboratory has been flooded with sputum, a futile procedure for such a purpose. Great variation in fees has caused criticism among teachers. The lack of a standard method of examination has produced an impression of professional uncertainty, and caused a definite loss of prestige.

These comments are made not in a spirit of criticism, but that we may profit in the future. It seems to me that the State Medical Association should have been informed, so that a committee might have been appointed to draft recommendations for a standard technique, and a uniform fee schedule. The teachers' association might have been asked to prepare a bulletin for teachers that would have aided in securing their coöperation.

It is the privilege of any doctor to follow the method of examination that seems to him best. In a general study such as this, however, a standard technique is desirable. Much remains to be learned about tuberculosis. No method of examination is perfect. It is believed, however, by many that Mantoux tests to determine the presence of infection and X-ray of positive reactors to demonstrate active cases, is a simple, inexpensive, and reliable method. It leaves least to the expertness of the examiner. It may not be 100 per cent perfect. The active cases, however, that will escape such a filter will be few.

In the Flandreau Indian School, where such studies have been routine for several years, no active cases have developed in over 1,000 students where Mantoux tests and X-rays were negative. Much of the credit for this has been to the aid of Dr. J. A. Myers, who has been kind enough to study our films and guide us in the work.

A. S. R.

MEDICAL COURSES FOR PHYSICIANS

During the past fifty years there have been such marked advances through contributions of new knowledge in various phases of medicine that the physician who graduates well informed is likely

to be out-of-date within five or ten years unless he is able to read a stupendous amount of literature. The physician who develops a large practice can not find the time to read all of the medical literature being published each month. His time is taken largely by actual diagnostic and therapeutic work and conferences with patients and their families so that very little is left for extensive reading. Attempts to meet the needs of practicing physicians have been made through the publication of brief abstracts of articles by the Journal of the American Medical Association and others.

Many schools of medicine are assuming responsibility for keeping their graduates and others practicing in the regions they serve informed on new developments. Several methods have been employed, such as the giving of short concentrated courses, lasting from a day to several weeks, the time depending upon the nature of the subject to be taught, the amount of recent information available, etc. Another method is to offer a course consisting of two hours one evening each week at a time when physicians can be brought together in the medical school for lectures and demonstrations. Such a course usually extends over a period of a quarter or a semester. Again, courses of lectures and clinics may be taken to local medical societies, where once every month throughout the school year or for any specified time at the regular meeting of the society, faculty members representing various departments present the new developments in their fields. Such courses may even be offered before medical societies located rather remotely from a medical school.

At the University of Minnesota, during 1934-35, two hundred and forty-two physicians took advantage of such medical courses arranged through the General Extension Division of the University. A course of intensive work in refraction was conducted by the Department of Ophthalmology over a period of four weeks in the University Hospital. Courses in allergy, practical preventive medicine, etc., were presented during evening hours. Several of the men who took these courses were practicing one hundred miles away. Short courses on the campus in cancer, diabetes mellitus, fractures, heart disease, etc., were well attended. Thirty-eight lectures were presented before local medical societies in such places as Austin, Olivia, Blue Earth, Albert Lea, Glencoe, and Hutchinson.

For the year 1935-36 Dr. C. A. McKinlay is Chairman of the Committee on Hospitals and Medical Education of the State Medical Association, and Dr. R. R. Price is Director of the General Extension Division of the University. Either of them will be pleased to have communications from physicians interested in taking any phase of medical work, either through their local societies or on the campus.

Physicians throughout the nation can make similar arrangements in a number of medical schools, and no doubt in those institutions where no provision has been made for such work, it could be arranged if sufficient demand were made for it. With the further development of courses for practicing physicians, there will be no excuse for the physician being out-of-date a few years after graduation, because of the opportunity for all to keep abreast of the times through special intensive instruction on advances which have been made since graduation. Osler said: "The doctor's post-graduate education comes from patients, from books and journals, and from societies, which should be supplemented every five or six years by a return to a post-graduate school...."

J. A. M.

CHROMOSOMEOLOGY

Birth control, like every other agitated thing is causing quite a stir. Those who consider themselves fit are having fits because of the greater birth rate of the unfit and yet they do not find it fit for them to take steps to increase the propagation of their own kind to make up for proposed extinction of those that they consider unfit.

The trouble is that nature plays the most unexpected tricks at times; as yet we have not fathomed all her secrets. Brilliant parents are not infrequently disappointed in their children while genius asserts itself in unlooked for places. If the chromosomes of the parental cells play such an important part in the transmission of ancestral characteristics, what shall be said about these exceptions?

Is it possible that the birth control movement will go so far as to require every matrimonial applicant to be examined by a board of behaviorists and hereditarians who in turn shall submit his dreams for the approval of an official psychoanalist? Darwin, where art thou? Must natural selection henceforth be subversive to the dictates of a group of cellular pathologists?

A. E. H.

THE WATER SITUATION

The matter of furnishing an adequate supply of pure water for a community is a highly technical one, the responsibility for which rests on the shoulders of trained persons who have specialized knowledge of hydraulics, sanitary engineering and the basic sciences of bacteriology and chemistry. The man on the street knows absolutely nothing about it. All water means to him is something to drink, to take a bath in or to water his lawn and as long as there is plenty of it and the taste is good he gives it no attention, which is just as well, since he knows nothing about it, as has just been stated.

But if anything happens, the whole picture is changed. Let the harmless algae take on their seasonal growth and give the water that peculiar flavor which is so suggestive of mildly tainted blubber, or let there be a stubborn outbreak of typhoid requiring a prophylactic chlorination or perchance an overplus of the peaty content which calls for treatment with tasteless filter-alum, then all technical lore is swept aside and the man on the street asserts himself as never before. He may concede that the attorney is necessary for legal matters or the surgeon for an operation, but about water: well, he *knows*.

So we are going through our periodical shake-up in Minneapolis, just as other communities have to do in their turn, over the question of whether we should continue to use the filtered river water, which has to be treated for everything from summer complaint to hardness, or whether we shall tap a hypothetically inexhaustible basin of pure artesian water which is supposed to be right under us, awaiting our call. A vote has just been taken and it is overwhelmingly favorable to the artesian idea. So decided was this majority that it has had the political effect of stopping, for the time being, extensive expenditures for the development and improvement of the present system.

We are just another man-on-the-street but we have talked with qualified people and here is what they say:

1. There is no way of ascertaining with certainty how adequate the artesian supply would be for the needs of Minneapolis. The evidence is rather against it and there would always be uncertainty about its dependability.

2. The fact that it was pure at the source would give no assurance of its being so at the tap. Cross contamination can easily happen, no matter from where the water comes.

3. Most artesian water here is so hard that when used hot it soon clogs the pipes. In the Medical Arts Building the hot water is all city water; the cold water comes from an artesian well which furnishes a very palatable article but if used in the hot water pipes it would close them all up within a year.

These are practical answers to vital questions, obtained from reliable sources. They are passed on for what they are worth, not only to Minneapolis readers but to any others, for water supply problems crop up anywhere where people live in communities.

G. C.

CONGRATULATIONS TO SOUTH DAKOTA

The State Board of Health of South Dakota recently passed a regulation requiring all teachers to have a certificate from a regularly licensed physician showing them to be free of active tuberculosis before being allowed to teach in any public or parochial school of the state. This is certainly a step in the right direction, for no one wishes his children exposed to the dangers of a teacher suffering from active tuberculosis.

It has been shown that the tuberculous teacher is a real danger to the pupil, and for this reason every precaution possible should be taken to guard against it. The benefit to be derived from such a regulation will depend largely on the physician giving the certificate. The average physician today knows that early tuberculosis can be detected only by a most careful examination. Unfortunately that are still a few physicians who feel they can make a diagnosis of tuberculosis by looking at the patient. A certificate from anyone who has not made a thorough examination is of no value, but on the contrary only a farce. Certainly everything possible should be done to prevent teachers with active tuberculosis from teaching and thus exposing the children to the dangers of infection.

It is rather unfortunate the State Board of Health did not specify the kind of examination to be made, so that it would be standardized and all certificates be of equal value. Unquestionably, the simplest method of detecting tuberculosis would be to give the tuberculin test to all teachers. Less than 50 per cent would react positively, showing they had been infected, and would need further examination. Those reacting positively should be more completely examined, preferably by means of the X-ray to determine if clinically active tuberculosis is present. An examination made by this method would be simple according to a definite standard and sufficiently accurate to detect all those who might have the disease, and

thus be a source of danger to the pupil. Such an examination would also benefit the teacher, for it would be the means of detecting the disease early, when she would have the best chance to recover. It would protect the teachers from each other as well as being the means of protecting the pupil.

This regulation gives the physicians of South Dakota an opportunity to render a real service in the campaign against tuberculosis. It is to their interest to make the proper examination before giving a certificate. It is well known that it is only by looking for tuberculosis that it can be discovered at a time when the patient has a good chance to recover, and before she has exposed those with whom she associates to the dangers of infection. The disease is usually well advanced before the symptoms have become sufficiently marked to cause a patient to consult the physician on account of them.

South Dakota is to be congratulated in taking steps to discover tuberculosis in the teachers early when the chance for recovery is best and before they have become a source of danger to those with whom they associate.

S. A. S.

NEWS ITEMS

Plans are underway to secure funds to build a hospital in the near future at Hudson, S. D.

Dr. B. K. Kilbourne, Fargo, N. D., has been appointed a member of the Montana State Board of Health.

Dr. A. C. Johnson, Great Falls, Montana, has recently returned from a years post-graduate study in Europe.

Bronson, Minn., is planning on the construction of a modern hospital in that city, during the next few months.

The 1936 annual meeting of the South Dakota State Medical Association will be held at Sioux Falls, on May 4-5-6th.

Dr. Russell Gates, Minot, N. D., was honored with a farewell dinner, before leaving for California, his future home.

Dr. F. D. Hurd, formerly located at Tolley, has moved to Sherwood, N. D., and will continue in general practice.

Moose Lake, Minn., has been selected for the new hospital for the insane, that will cost over $2,000,000 when completed.

Dr. Wm. Copenhaver, Helena, Mont., has been appointed to the staff of the New York Post-Graduate Hospital, and will take up his active work at once.

Dr. Martin J. Fardy, Minot, N. D., who has been spending the summer months in New York City, taking a post-graduate course, has returned to his home office.

Dr. C. E. Remy, superintendent of the Minneapolis General Hospital, is in St. Louis, Mo., attending the annual meeting of the American Hospital Association.

Dr. Glenn A. Carmichael, Butte, Mont., one of the youngest members ever to receive the honor, has been elected a member of the American College of Surgeons.

Dr. R. H. Leavitt, who has been located at Carson, N. D., for many years, has retired from active practice and will move to California and enter the newspaper field.

Dr. J. E. Mannion, Platte, S. D., is back at his office, after an absence of several months spent in Chicago, taking a post-graduate course at the Cook County Hospital.

Dr. George H. Coffin, who practiced for several years at Minot, N. D., died at his present residence last month at Longview, Wash., after a short illness of heart trouble.

Drs. Coventry, Hirschbroeck and Gillespie, of Duluth were the guest speakers at the summer meeting of the Clay-Becker County Medical Society held at Detroit Lakes last month.

Dr. Max Mass, who has been in practice for several years at Cold Springs, Minn., has gone to New York City, where he will be connected with one of the leading hospitals of that city.

Dr. L. R. Gowan, Duluth, was the guest speaker at the September meeting of the members of the Range Medical Society held at Virginia, Minn. The doctor's subject was "Nervous Diseases."

Dr. Albert Fritsche, New Ulm, Drs. J. T. Schlesselman, A. V. Denman, and H. W. Pribnoe, of Mankato, Minn., are off on a few weeks hunting vacation in western Canada off civilizations beaten paths.

The quarterly meeting of the Blue Earth Medical Society was held at Fox Lake Park, last month with a good attendance of physicians and their families, a golf match was followed by an enjoyable picnic lunch.

Bismarck, N. D., celebrated the fiftieth anniversary of St. Alexius hospital last month, this being one of the largest hospitals in the state. Sister M. Boniface, has been the active superintendent for the past 42 years.

Members of the Grand Forks Medical Society opened their fall meetings at Grafton, N. D., with Drs. Halloway and McKinnon, of Winnipeg, as the guest speakers of the evening. Dr. Landry, president of the society, presided.

Dr. Clarence Pflaum, head of the pathology department of St. Lukes Hospital, Duluth, died recently after an illness of only a few days. Dr. Pflaum was a graduate of the University of Minnesota and only 35 years of age.

About 70 doctors took part in the final golf game of the season by the members of the Hennepin County Medical Society, at the Midland Hills course last month. Prizes being awarded to the winners in the various classes.

Dr. Arthur Tubal Caine, for the past 15 years superintendent of the State asylum, at Anoka, Minn., died on September 13, after an illness of over three months. Dr. Caine was a graduate of the University of Minnesota in the class of 1900.

Dr. Clarence E. Lum, who retired from active practice at Duluth several years ago, passed away last month after a short illness, the result of a heart attack. Dr. Lum had been prominent in the medical profession throughout the state for over 30 years.

Dr. Frank H. Krusen of Philadelphia, has been named director of physical therapy at the Mayo Clinic and affiliated hospitals. He was associate dean of Temple University School of Medicine and director of dispensaries and physical medicine department at Temple University Hospital, Philadelphia.

The Samuel D. Gross Prize for 1935 has been awarded to Dr. Owen H. Wangensteen, professor of surgery, University of Minnesota School of Medicine, Minneapolis, for an essay entitled "The Therapeutic Problem in Bowel Obstruction." The prize is awarded every five years by the Philadelphia Academy of Surgery to the writer of the best original essay on surgical pathology or surgical practice founded on original investigations.

The Minnesota State Medical Association broadcasts weekly at 11:15 A. M. every Tuesday over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota, is the speaker. The program for the month will be as follows: October 1, "Dysentery"; October 8, "Community Nursing Needs"; October 15, "Appendicitis"; October 22, "Water and Health"; October 29, "Dental Care."

The University of Minnesota Extension Division again offers its four-weeks' course in Elementary Refraction, designed especially for rural medical practitioners who might wish to supplement their general practice with refraction and physiological optics. This course will commence on November 4th, and end on November 30th, in the University Medical School under the supervision of the Department of Ophthalmology. This course will be limited to a registration of 10 physicians. Physicians studying under this course will be given the opportunity of examining patients at the Wilder Foundation and Ancker Hospital, St. Paul, the University Hospital, Minneapolis, and various city out-patient departments. The instruction is outlined as follows: Daily (8:30 to 10:30 a. m.). Demonstrations and teaching of practical refraction and retinoscopy will be conducted daily by instructors at the University and Wilder refraction clinics. The program will be varied somewhat on Saturdays, at which time practical work will be given in the fitting of frames and mountings under the supervision of opticians. Daily (4:30 to 5:30 p. m.). Lectures will be given in a systematic way covering such topics as (1) Elementary refraction, (2) Muscle balance and anomalies and fusion training, (3) Theory and practice of campimetry and perimetry, (4) Ophthalmoscopy and recognition of fundus pathology, (5) Practical hints in refraction and prescription writing. Daily (1:30 to 3:00 p. m.). Out-patient clinics will be held at the University, Wilder, and City Hospital eye clinics; and also such operative clinics as may be arranged in conjunction with prevailing schedules. Instruction, didactic and practical, will be given by the Departmental Staff and members of the Faculty chosen by the Head of the Department for their ability to teach and demonstrate special phases of the subject. Applications should be sent at once to Dr. Richard R. Price, Director of the University Extension, Administration Building, University of Minnesota, Minneapolis. Physicians must furnish their own ophthalmoscope and retinoscope and textbooks. Registrants must devote four weeks of their time exclusively to this course.

The JOURNAL LANCET

Minneapolis, Minnesota
October 15, 1935

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New Series

Traumatic Detachment of the Retina*

Charles Nelson Spratt, M.D.
Minneapolis

THE publication of a paper in 1929, on the treatment of detachment of the retina by Gonin of Lausanne, in which was reported 51 per cent cures out of 81 cases, marked a milestone in the treatment of this serious eye condition. Gonin inserted a Paquelin cautery through an opening in the sclera so as to cauterize the edges of the tear or hole in the retina, thus causing the latter to adhere to the choroid.

Before Gonin, the treatment of detachment was a dark chapter in Ophthalmology. Some twenty-five years ago, Fuchs said: "Unfortunately, it is only in the rarest cases that these good results are lasting. As a rule, after some time, the separation develops anew, and ultimately in spite of all our therapeutic endeavors, becomes total, so that the prognosis or retinal detachments in general must be characterized as very unfavorable. The cause of the recurrences, lie in the fact that no treatment is able to do away with the lesion which usually is at the bottom of the trouble, namely, the shrinking of the vitreous, by which the freshly attached retina is constantly withdrawn again from its bed. In inveterate cases, or in total detachment of the retina, we had better abstain from any form of treatment. In total detachment of the retina, cataract usually develops later on, the eye becomes soft and a slight degree of atrophy of the eyeball supervenes. Moreover, a sluggish form of iritis is not infrequent in eyes with detachment of the retina."

In considering the propriety of submitting the patient to surgical measures it must not be forgotten that in 1887 the Committee of the Société Francaise ended their report on all operations known to them at that time with these words: "Since we cannot affirm the certainty of any operative measure it may be stated that, as a rule, it is good policy to abstain from any surgical interference in the treatment of detached retina."†

In 1913, Derrick Vail Sr. of Cincinnati, in response to a questionaire, received replies from 281 American ophthalmologists, 250 of whom reported that they had never seen a cure of detachment of the retina. The total number of cures reported were twenty cases or approximately one per thousand cures.

Spontaneous cure of detachment of the retina may occur especially after injury, and many writers have reported cures after several weeks rest in bed, the use of purgatives, sweating, and pressure bandages, and evacuation of the subretinal fluid by puncture of the sclera.

Detachment of the retina was probably first described by Saint Yves in 1722 and recognized by Ware of England in 1805. Wardrop, in 1834, dissected an eye in which there was a detachment. In 1850, Mackenzie recognized the condition and

*Presented at the 13th annual meeting of the Great Northern Railway Surgeons' Association, Glacier Park, Mont., July 1, 1935.

†Rapport sur l'enquété de la Société rélativement aux décollements de la retine. Bulletins de la Soc. Francaise d'ophtal., 1887, p. 67.

evacuated the fluid between the retina and choroid through a scleral puncture. Coccius was the first to observe the tear of the retina in detachment with the ophthalmoscope.

Frequency: Sattler, stated that in Germany, where high myopia is very prevalent, detachment occurs in five to six per thousand patients; French writers give 416 in 67,464 patients (6-1000) and Salzman mentions eight cases among 400 eye injuries in soldiers.

Pathology: It will be remembered that the eye forms as a bud (the optic vesicle) from the forebrain. (Fig. 1.) This becomes invaginated, forming the optic cup. (Fig. 2.) The two surfaces do not become fused but form a structural defect, and separation or tear of the retina occurs between the pigmented layer of the choroid which is the outer wall of the optic vesicle, and the layer of rods and cones of the retina which is the invaginated portion. In the adult, the retina is firmly attached only at the optic disc and the ora serrata. It is thickest near the nerve, being .22 of a millimeter, gradually becoming thinner toward the attachment in the ora serrata where it is approximately .004 mm.

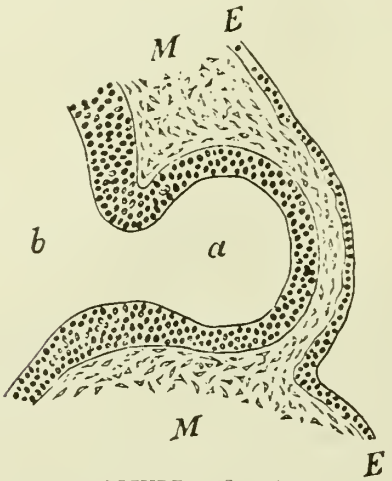


FIGURE 1 (Spratt)

Formation of the primary optic vesicle, showing epiblast and mesoblast.

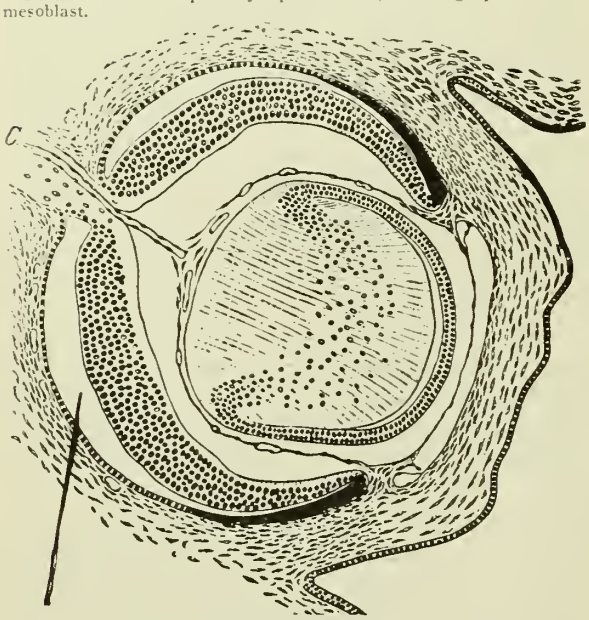


FIGURE 2 (Spratt)

After invagination and formation of secondary optic vesicle, showing cornea, lens, and the rod-and-cones layer of the retina with space between, and the outer portion which becomes a pigmented layer of the choroid. It is the separation of these layers which gives rise to retinal detachment.

Etiology: Detachment occurs secondary to tumor, iridocyclitis, nephritis, lues, tuberculosis and pregnancy. In the myopic eye, frequently, there is degeneration of the retina and choroid, and stretching of the tissues, so that tears occur spontaneously. In Horner's Clinic in Zurich, out of 300 cases of detachment, 48 per cent were due to myopia, 16 per cent to trauma, and 23 per cent to hemorrhage. Leber reports 3,408 patients of detachment, 85 per cent of which were in myopes; Nordensen, 80 per cent, out of 1,100 cases, and Galezowski, 80 per cent out of 1,158 cases. In myopes, detachment occurs more frequently in male than in the female. Galezowski reported bilateral involvment in nine per cent of 551 cases; Deutschmann seven per cent in 222 cases, Elschnig, 25 per cent in 99 cases, and Helming nine in 162 cases. In these eyes, detachment may follow from slight injures, lifting heavy objects or from falls.

1. In March, 1909, Walter G., age 16 years consulted the writer for a retinal detachment of the right eye. Six days previous, after lifting a bookcase, patient noticed his vision was blurred. Within 24 hours, the vision was entirely gone. The patient was a high myope, wearing at that time a -32.00 D. lense. Seven months later, after lifting several kegs of nails, the vision in the other eye became blurred. Examination disclosed a detachment in the inferior half of the retina. Improvement followed rest and evacuation of the fluid. Vision returned to 5/200. Later, the vision was entirely lost in both eyes and cataract formed. These were needled, but without improvement.

Direct trauma is a factor in about 16 per cent of retinal detachments. In Dunnington and Macnie 150 cases there was a definite or suggestive history of trauma in 41.3.

2. In 1930, Robert O., age nine years, was seen by the writer. His left eye had been struck one week previous, by the handle of a sling shot. Examination showed a detachment of the retina of 8 Diopters which involved the temporal

half of the retina. There was a drooping of the upper lid. Complete recovery followed rest in bed. (Fig. 3-4.)

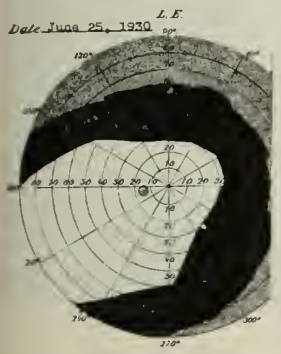


FIGURE 3 (Spratt)

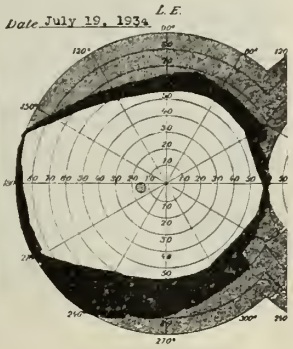


FIGURE 4 (Spratt)

Case 1. Spontaneous re-attachment of retina after trauma.

3. An exploding breech block struck Eugene C., age 20 years, in the right eye. There was a detachment in the temporal portion. Re-attachment took place after rest in bed. Vision now equals 20/50. (Fig. 5-6.)

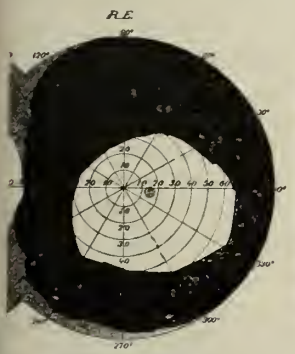


FIGURE 5 (Spratt)



FIGURE 6 (Spratt)

Case 2. Spontaneous re-attachment of the retina after injury.

4. Mrs. Y., was struck by an automobile and was unconscious for several minutes. She was badly shaken due to injuries about the head, but apparently there was no actual injury to the eye itself. Some weeks later, while on a train, she noticed the vision was blurred at the side. Examination by me the next day, showed a detachment at the upper nasal portion of the retina. Complete recovery followed after the use of multiple punctures with diathermy needles. Normal vision. (Fig. 7-8.)

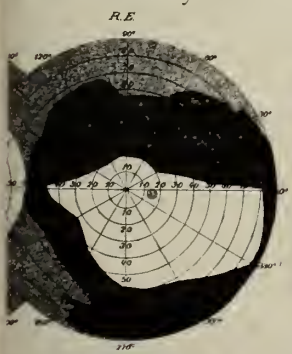


FIGURE 7 (Spratt)



FIGURE 8 (Spratt)

Detachment following indirect injury. Operation. Recovery.

5. On Thanksgiving Day, 1934, John L., 39 years old, a Great Northern employee was struck in the right eye by the head of a spike. The ecchymosis cleared up and he returned to work. I saw him first on Feb. 2, 1935, when he complained of a blurring in the vision of the right eye. Examination showed a detachment in the superior temporal portion of the retina. A round hole in the retina was distinctly seen in the superior temporal quadrant. Complete recovery after the use of diathermy needles. (Fig. 9-10.)

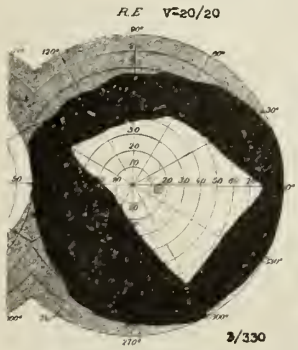


FIGURE 9 (Spratt)

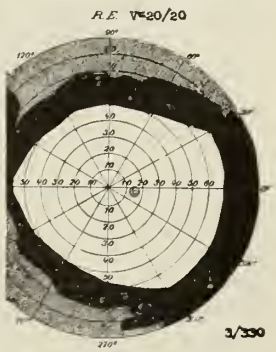


FIGURE 10 (Spratt)

Detachment following direct injury to eye three months previous. Operation and recovery.

Location: The majority of retinal detachment originate in the upper half of the retina. The fluid gravitates downward later causing a separation in the lower portion. The tears occur most frequently in the superior and inferior temporal quadrants between the equator of the ora serrata.

Pathology: The vast majority of retinal detachments when carefully examined, show tears of the retina. De Wecker, in 1870, emphasized this frequently. In 1882, Leber stated that the tear occurs in every case. Hanson, in 1871, and Schweigger, in 1873, called attention to the tears as being the cause of detachment.

Prognosis: The cases of spontaneous cure of detachment may occur especially after trauma; Birch-Hirschfield, reported reattachment in 10 per cent and Earnest Thompson, reported 7.2 per cent. The majority of cases, whenever untreated, lead to blindness. Detachments, due to injury, those seen early, those in which there are single small tears, are most favored for operation. The longer the duration of detachment, the poorer the prognosis. Multiple tears and the detachment after cataract extraction or in high myopia, offer less chance for cure.

Treatment: Before Gonin, the treatment consisted of rest, drainage, pilocarpine sweats, etc. The Heidelberg Clinic reported seven cures in 187 patients. Deutschmann, reported 30 per cent cures in 539 cases, after bisection of the retina. Von Graefe reported 1,863 cases with four improved in 50 cases of scleral puncture after 18 months. Faro, in 1866, and Scholer, in 1899, advocated injection of iodine in the space between the retina and choroid with six cures. Deutschmann, advocated bisection of the retina and injection of calf's vitreous. His results were questionable. In 1881, De Wecker, Martin, de Luca, treated patients by means of ignipuncture. Deutschmann in 1899, reported a cure in which ignipuncture had been made three years previously at the site of the tear. Galezowski, 1902, systematically used puncture and drainage of the sub-retinal fluid, by means of the cautery. As was mentioned before, Gonin, who, while not the originator of the method of ignipuncture, called attention to the tear as being the cause of the detachment and the necessity of cauterization of the retina to produce permanent adhesion to the choroid. Various modifications have been devised in the last six years. Guist of Vienna made multiple trephine openings in the sclera and touched the choroid with KOH which was neutralized with dilute acetic acid. (Fig. 11.)

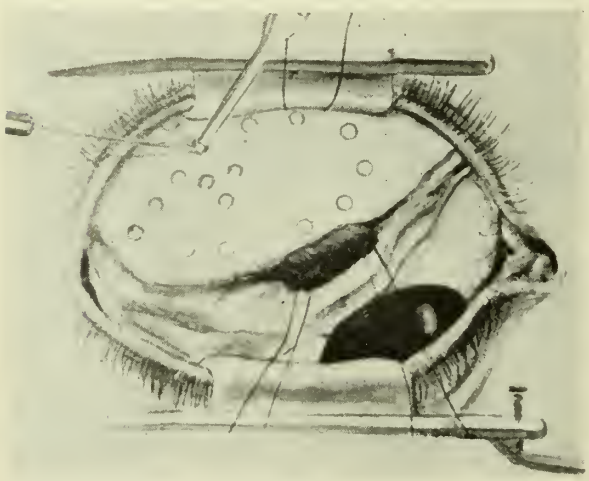


FIGURE 11

Verhoeff, in 1917, and Vogt in 1934, advocated the use of the galvanic current to produce adhesions. Weve and Larson, in 1930, used 1-3 mm. diathermy electrodes applied to the surface of the sclera; both later made transcleral punctures with needles in order to produce adhesion. Safar applied diathermy by multiple needles 1½ mm. long which just penetrated the sclera. Walker of



FIGURE 12

Los Angeles, whose method seems to be most satisfactory up to the present, uses irido-platinum pins of tacks, 1½ mm. long, (Fig. 12.) which are inserted in the sclera; these are placed so as to form a barrage around the tear. Sometimes if the tear is large or multiple 20 to 70 pins are placed through the sclera. By this method the eye does not become soft, due to the loss of fluid as follows the use of puncture with diathermy needles. At the completion of the operation all the pins are removed and if the subretinal fluid is not evacuated through the punctures, a larger hole is made with a trephine or a diathermy needle. To effect a cure, the retina must come in contact with the cauterized area of the Choroid. Various operators report from 35 to 80 per cent cures in detachment.

The relation of trauma to detachment is often an important medico-legal question, and the ophthalmologist is frequently called upon for expert testimony. In general, I think it may be stated:

First: Severe injury to the eye is apt to result in rupture of the choroid or sclera and such damage to the globe itself, that the accompanying detachment is of secondary importance. It is stated that following war injuries, the number of detachments were comparatively few.

Second: Minor, direct injuries to the eye may give rise to detachment. The patient first complains of light flashes or retinal irritation, and it is only some time afterwards, generally weeks, that blurred vision is noted and an ophthalmologist is consulted. Zeeman and Ollman (1935) report the case of a young woman, whose left eye was struck by a ball. When seen some two weeks later, there was commotio retinae (edema), several hemorrhages, and three round holes in the retina. When examined later, these three holes had coalesced and formed a horseshoe tear.

Three months later three was a large detachment and at the end of six months, although the tear was till present, the retina had become spontaneously attached.

Third: Detachment following slight injuries, blows to the head, falls, strains as from lifting, would occur only in eyes that are congenitally defective, in myopes with stretched retina, or in diseased eyes showing senile or inflammatory changes (chorio-retinitis).

Such eyes are predisposed to detachment of the retina and would have at some later period, had a spontaneous or idiopathic detachment.

A tear occuring at a considerable time as a year after an accident, cannot be attributed to the injury.

PELVIC INFLAMMATORY DISEASE*

JOHN H. MOORE, M.D., F.A.C.S.†
GRAND FORKS, N. D.

INFECTIONS produce the most frequent lesions of the female genital tract. The nature and extent of the lesions produced vary from relatively localized lesions with mild symptoms to those involving all the pelvic organs and producing symptoms of the greatest severity. I would include in my definition of pelvic inflammatory disease any infection of the female genital tract, which involves the uterus, Fallopian tubes, ovaries, pelvic peritoneum or pelvic connective tissue, individually or en masse.

That pelvic inflammatory disease is a common condition can be abundantly illustrated by referring to the admission register of any general hospital. I have had the figures compiled for 1934 from the Deaconess Hospital, Grand Forks, North Dakota, a general hospital admitting private patients only, and they show that approximately ten per cent of the women admitted, exclusive of maternity patients, were suffering from pelvic inflammatory disease.

The etiology of pelvic inflammatory disease is variable, often confusing. In an attempt to clarify this important aspect of the problem, I have prepared a table adapted from Curtis[1], in which the more common types of infection are listed.

Etiology of Pelvic Inflammatory Disease

Adapted from Curtis' Textbook of Gynecology

I. Gonorrhea.

II. The "cellulitis group" of pelvic infections:
1. Postabortive infection.
   (a) Bacterial flora of the uterus and vagina (streptococci have been isolated by Curtis in approximately 30% of patients with chronic purulent leucorrhea).
   (b) Instrumentation of the uterus.
   (c) Laceration of the cervix.
   (d) Infections of systemic origin:
      (1) Epidemics of influenza.
      (2) Abscessed teeth or other distant foci.
2. Puerperal infection particularly likely to follow:
   (a) Infection introduced at or near the time of labor.
   (b) Traumatism at the time of labor.
   (c) Hemorrhage.
   (d) Infection latent in the patient herself.
3. Pelvic cellulitis of other etiology:
   (a) Contraceptive stems.
   (b) Electric cautery knife.
   (c) Instrumental perforation of the uterus.
   (d) Radium.
   (e) Vaginal douches administered under high pressure.
   (f) Incident to infection of adjacent organs, as an accompaniment of uterine cancer or as a complication of surgical operations.

III. Tuberculosis.

From a bacteriologic standpoint, there is probably no organism which is pathologic for the human body which may not become etiologic in the production of pelvic inflammatory disease. Those most commonly found are: (1) the gonococcus, (2) the streptococcus, (3) the staphylococcus, (4) the colon bacillus, (5) the tubercle bacillus.

Any detailed discussion of the pathologic changes occurring in pelvic inflammatory disease would carry us too far afield for the purpose of this paper, but I want to call attention to two very important facts: (1) Gonorrheal infections of the female generative tract extend *by way of the mucosa,* (2) The "cellulitis group" of pelvic infections progress *thru the wall of the uterus.*

With those facts in mind, it is interesting to contrast the pathologic pictures seen in these two chief types of pelvic infections.

Gross Pathology

Gonorrheal Group

1. Varying masses of pelvic adhesions, separable on blunt dissection.
2. Uterus tends to be displaced backward and held by adhesions.
3. Tubes firm, more or less thickened, tortuous, nodular and involved in adhesions.

*Presented before the Northern Minnesota Medical Association, Duluth, Minn., August 12, 1935.

†From the Healy, Law, Woutat, Moore Clinic, Grand Forks, N. D.

4. Usually possible to distinguish adnexal masses as separated from body of uterus.
5. Hydrosalpinx or tubo-ovarian cysts most common.
6. Thrombophlebitis is unusual.

Cellulitis Group

1. Number and character of pelvic adhesions varies greatly; unusually firm and resist blunt dissection.
2. Uterus less commonly displaced backward.
3. Tubes involved last, if at all. When involved the mucosa is last portion infected.
4. Brawny exudates in cellular tissues often make such distinction impossible.
5. Ovarian abscesses of large size most common.
6. Thrombophlebitis, pelvic adhesions and intestinal adhesions are common.

The pathology of pelvic tuberculosis usually resembles, grossly, a severe recurrent gonorrheal infection of the pelvic organs.

The diagnosis of pelvic inflammatory disease is facilitated by a careful history. Such a history will often aid in determining the type of infection present.

It is the examination of the patient, however, that gives us the most important information in the diagnosis of pelvic inflammatory disease. Gentleness in examination is urged for two reasons: (1) One can do great damage by too forceful manipulation of pelvic tissues, damaged by inflammation, and (2) by rough handling, one increases the patient's pain and causes her to resist examination of the pelvis.

With the thought in mind of clarifying the problem of diagnosis and especially of attempting a differentiation between the two chief types of pelvic infections, I have prepared a table which lists some of the diagnostic criteria that have proved valuable to me.

Acute Pelvic Inflammatory Disease

Gonorrheal Group

1. History.
   (a) Lower g-u tract infection.
   (b) Purulent leucorrhea.
2. Character of pain.
   (a) Always present, often bilateral, aching or colicky.
3. Vomiting is usually absent.
4. Fever is moderate, 100 to 102.
5. Chills are rare.
6. Laboratory findings:
   (a) Gonococci often found in "spreads."
   (b) Blood culture negative.
   (c) Leucocytosis, 12,000 to 18,000 uncomplicated cases.
   (d) Anemia slight.
   (e) Sedimentation time increased.
7. Examination:
   (a) Patient appears fairly comfortable, facies normal.
   (b) Abdomen usually distended but soft.
   (c) Tenderness of lower abdomen marked, rigidity only moderate.
   (d) External genitals often show stigmata of gonorrhea.
   (e) Cervix shows varying degrees of cervicitis, purulent leucorrhea usual.
   (f) Pelvic masses unilateral or bilateral, beside or behind uterus. Usually possible to outline uterus separately from pelvic masses. Pressure on cervix causes pain in region of tubes.

Cellulitis Group

1. History.
   (a) Labor, abortion, instrumentation.
   (b) Bleeding or thin leucorrhea.
2. Character of pain.
   (a) Pelvic distress rather than colicky pain.
3. Vomiting is frequent, anorexia usual.
4. Fever is septic in type, sub-normal to 105 or higher in a few hours.
5. Chills are the rule, frequently followed by drenching sweats.
6. Laboratory findings:
   (a) Streptococci or members of colon group most common on smear or culture from uterus.
   (b) Blood culture sometimes positive.
   (c) Extremely variable, leucopenia to 30,000 or more.
   (d) Anemia progressive and severe.
   (e) Sedimentation time very rapid.
7. Examination:
   (a) Patient "looks sick," has anxious expression, pallor is common.
   (b) Abdomen markedly distended and painful.
   (c) Tenderness and rigidity are usually excessive.
   (d) External genital findings are equivocal.
   (e) Cervix shows evidence of recent trauma, edema is common, leucorrhea usually thin, foul, brown or bloody.
   (f) Parametrial thickening the rule. Uterus varies in size according to puerperal or post-abortive state. Often impossible to outline cellular exudate as distinct from uterus. Pressure on cervix causes pain in bases of broad ligaments.

The diagnosis of chronic pelvic inflammatory disease of gonorrheal origin is often difficult. Of chief importance in the diagnosis of this chronic type of pelvic infection are the following:

Symptoms and Signs of Chronic Pelvic Inflammatory Disease of Gonorrheal Origin

1. Persistent pelvic pain the chief symptom:
   (a) Aggravated just before menstruation.
   (b) Less after the flow is established.
   (c) Varies in severity with the displacement of pelvic organs and the extent of adhesions.
2. Menstrual irregularities are frequent:
   (a) Tendency toward menorrhagia in advanced cases.

(b) Acquired dysmenorrhea often of gonorrheal origin.
(c) Sanguino-purulent leucorrhea the first few days after menstruation is of some significance.

3. Disturbance of bowel function:
(a) Rectal tenesmus on defecation in absence of demonstrable rectal or anal pathology.

4. Sterility:
(a) Rubin test.
(b) Roentgenography after lipiodol injection.

5. Upon examination:
(a) Tenderness or thickening in the region of the tubes.
(b) A retroverted uterus, replaceable with difficulty if at all.
(c) Pain referred to the region of the tubes upon upward or posterior movement of the cervix.
(d) Stigmata of gonorrhea in the external genitalia of the patient or in the male sexual partner.

I wish that I could leave this next phase of our subject out of this discussion for the diagnosis of chronic pelvic inflammatory disease of the cellulitis type causes me more trouble and is the source of more errors in diagnosis than any other phase of my gynecologic practice. One need only mention the subject of "backache" to bring forcefully to your minds one source of error. If there is any group of patients who deserve our utmost sympathy and our painstaking study, it is this large group of semi-invalided women who haunt our offices. Their complaints are legion and their histories often confusing; but out of the mass of conflicting evidence most of these patients have one or more of the following complaints:

Symptoms and Signs of Chronic Pelvic Inflammatory Disease of Cellulitis Origin

1. Persistent pelvic pain, usually aggravated by even light household duties.
2. Functional uterine bleeding.
3. Pelvic masses of inflammatory origin which interfere with a variety of functions.
4. Chronic intestinal obstruction.
5. Symptoms of uterine prolapse.
6. Symptoms of sub-involuted uterus.
7. Backache produced by pelvic lesions.
8. Chronic bowel disorders, notably colitis due to mechanical interference with bowel function.

I have never been able to make a positive diagnosis of pelvic inflammatory disease of tuberculous origin prior to operation, though on several occasions I have been suspicious of it. Tuberculosis elsewhere in the body, usually pulmonary, is generally present. One should consider the following in diagnosis:

1. A history indicative of tuberculosis with Roentgen-Ray evidence of pulmonary involvement and with a positive Mantoux test.
2. Associated amenorrhea.
3. Pelvic symptoms in virgins and in others thought to be free from gonorrheal or the cellulitis type of infection.

The differential diagnosis of acute pelvic inflammatory disease of either gonorrheal or cellulitis origin is chiefly concerned with several clinical entities whose symptomatology is usually fairly definite. These include:

1. Acute appendicitis.
2. Ovarian tumor with twisted pedicle.
3. Ectopic pregnancy.
4. Intestinal obstruction.
5. Infections of the urinary tract.

Prophylaxis is of the greatest importance in the prevention of pelvic inflammatory disease. I would stress the following:

1. Every case of acute gonorrhea of the external genitalia and cervix should be put to bed. Acute gonorrhea is a self-limited disease in the female. Rest of the entire body will do much to hasten cure and prevent ascending infection.

2. Active treatment of acute gonorrhea of the external genitalia and cervix is harmful. This refers to douching, topical applications to cervix, urethra or vagina, or vigorous local treatment in any form except one. My experience has convinced me that the Elliott treatment if definitely gonocidal and that the hyperemia of the tissues and the outpouring of secretions, both from the vaginal mucosa and the cervix is a valuable adjuvant in the treatment of such a case.

3. Re-infection is a potent factor in the production of gonorrheal disease above the pelvic diaphragm. The male factor must be considered in any campaign of prophylaxis.

4. Strict asepsis in the management of labor will greatly reduce a large number of cases in the "cellulitis group."

5. In cases of abortion *from any cause,* the uterus should only be invaded for the control of hemorrhage.

The treatment of pelvic inflammatory disease, except that due to tuberculosis, may be divided into three stages: (1) The treatment of the acute attack. (2) The treatment of a chronic or recurrent infection. (3) The treatment of complications.

The General Treatment of the Acute Attack

Certain basic principles should be observed in the treatment of an acute pelvic infection, whether

that infection be of the gonorrheal or cellulitis group. These are:

1. Put the patient to bed and elevate the head of the bed on blocks.

2. Control pain.

3. Regulate the bowels. A statement from Holden[2] deserves quotation: "We greatly stress the importance of careful bowel hygiene, avoiding both constipation and diarrhea, as either distention or increased peristalsis will traumatize the inflamed adnexae."

The patient is given a liquid diet at first, well fortified with orange juice and grape juice, sweetened with glucose or lactose. Gradually a semi-solid diet is given but the emphasis is kept on an adequate fluid intake.

In addition to the Wassermann test, urinalyses and bacteriologic investigations I request complete blood counts and the determination of the sedimentation rate as a routine procedure on these patients. They have some value in prognosis.

The Local Treatment of the Acute Attack

My local treatment has undergone a radical revision since the Elliott equipment has been available. Regardless of the type of infection, gonorrheal, puerperal or post-abortive, I use the Elliott treatment in acute pelvic inflammatory disease. There is but one exception to that statement: I would not use it in a case of post-abortive sepsis with hemorrhage until after the bleeding has been controlled.

I would not have you believe that the Elliott treatment is a panacea for all pelvic infections, nor that it is fool-proof. It requires gentleness, a good technique and intelligent use of that technique for its success.

When should these patients be allowed out of bed? I try to keep them in bed for at least a week after the temperature has returned to normal. The sedimentation rate is of some value in deciding when to allow the patient greater liberty. One can also use the time-honored plan of making a bimanual examination and noting the reaction, but, if this is done, it should be done cautiously.

Supportive Treatment

Intravenous therapy: The use of dextrose solutions or of solutions of dextrose in normal saline solution is of great benefit, particularly in the acute infections of the puerperal or post-abortive type. Blood transfusion: The giving of blood from a suitable donor is often life-saving, especially in those infections of the cellulitis group.

Surgical Treatment

In my experience, this is limited to the drainage of large accumulations of pus by the vaginal route.

The Treatment of a Chronic or Recurrent Infection

It is at this point that honest differences of opinion are most in evidence. Should the treatment be operative or non-operative?

Non-operative treatment consists of:

1. The treatment of anemia, fatigue and nervous exhaustion.

2. Proper bowel hygiene.

3. Non-specific protein therapy.

4. The Elliott treatment.

Under such treatment a number of patients will become symptom-free and with little or no demonstrable gross pathology; others will be partially relieved of symptoms or even wholly relieved but will show considerable residual pathology; a third and a smaller group will obtain no relief of symptoms and will show no improvement in the pathologic findings, even after prolonged conservative treatment.

What are the chief indications for operative treatment? I believe that the following conditions are most likely to warrant surgery:

1. Adhesions with symptoms, chiefly those producing chronic intestinal obstruction.

2. Persistent pelvic pain, particularly when associated with painful displacements of the uterus or extra-uterine masses which jeopardize health or interfere with function.

3. Functional uterine bleeding, usually due to ovarian pathology.

4. Subinvolutional states of the uterus, usually dependent upon trauma of labor with associated pelvic pathology.

5. Large cystic residues of previous tubo-ovarian disease.

6. Recurrent gonorrheal infections.

7. Backache of pelvic origin and amenable to surgical correction.

8. Varying degrees of uterine prolapse with symptoms.

9. Selected cases of sterility.

When is it safe to operate in chronic pelvic inflammatory disease? There are a few criteria which are of value in answering this important question:

1. When a bimanual examination does not produce a rise in temperature.

2. When the sedimentation rate is normal.

3. When there is no leucocytosis.

The Treatment of Complications

In considering the treatment of complications I merely want to emphasize two points:

1. The rapidly progressive anemia, seen so commonly in the acute infections of puerperal or post-abortive origin is best treated by small, frequent blood transfusions.

2. Hemorrhage associated with puerperal or post-abortive sepsis offers the one rare indication for invasion of the uterus.

The Treatment of Pelvic Inflammatory Disease of Tuberculous Origin

There is a difference of opinion among gynecologists as to the best method of treating tuberculosis of the female pelvis. One must never lose sight of the importance of proper rest, hygiene and nutrition in any patient with this disease. Management of the tuberculous patient is more important from the medical side than it is from the surgical.

In a generalized tuberculous peritonitis, it is very doubtful if the pelvic organs should be sacrificed just because they happen to have some tubercles scattered on their serous surfaces. On the other hand, deep seated tuberculous lesions, involving the adnexa, should be removed; it is not wise in such cases to attempt to save diseased ovaries or uterus. The patient's chance of recovery usually demands their removal.

Conclusion

I have emphasized that the problem of pelvic inflammatory disease is a major one. The etiology is varied but a division into the three main groups, gonorrheal, cellulitis and tuberculous, is helpful, both in diagnosis and treatment. Conservative management of all acute pelvic inflammatory diseases will result in a lowered mortality. If such conservatism is carried out in the treatment of chronic pelvic inflammatory diseases it will reduce the incidence of operative interference but it will greatly improve the operative results in that still all too plentiful group where surgery eventually becomes necessary.

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CHRONIC ARSENIC POISONING AS DEVELOPED FROM THE HANDLING OF GRASSHOPPER BAIT*

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THE history of the use of arsenic in its various forms and compounds as a remedial agent dates back to the time of Dioscorides. There is further evidence that the early Chinese practice of medicine employed this drug for the treatment of intermittent fever. It was likewise a constituent of a paste used to remove the pubic hair of women as required by the Turkish ruler Mohammed.

In every era from that generation to this, arsenic has been employed by the medicinal practitioner, the artisan and in science and industry.

Many of the most renowned scientists of each epoch have devoted their entire effort in an attempt to establish a judicious usage of this valuable remedial agent, yet every prophecy which they have made has in the end left much to be desired.

There are but few of the elements known to science or industry which enjoy such universal usage and certainly none which has caused man more concern as to where it will next appear to torment or endanger his very existence.

The report of Dr. R. A. Osborn and Dr. V. A. Pease, Food Research Division, Bureau of Chemistry and Soils, United States Department of Agriculture, with its 450 authentic references on the "Toxicity of Arsenic," covers the important contributions made by scientific workers between the years 1901 and 1934 and bears mute testimony of man's inability to predict just where the next outbreak of poisoning will occur or how we shall proceed to alleviate it.

The high degree of toxicity which it exhibits for the lower forms of life recommended it to the modern entomologist as an efficient insecticide. Various compounds of arsenic have been tried for this purpose, but it is quite clearly established that the trioxide (white arsenic) is the best suited for their purpose especially in the poisoning of grasshoppers. This is unfortunate, as this particular form is also one of the most toxic to man.

You are all most familiar with the intensive campaign to exterminate the grasshoppers here in South Dakota during the last few years, but it occurred to me that some of you might not know the composition of the poison bait which was used in most sections of the state.

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The inert material consisted of bran and sawdust to which was added a cheap molasses, the latter being used as an attractive food for the hopper. Between five and seven per cent of arsenic trioxide was added to the molasses soaked bran and sawdust. Up to this point most of the work was conducted in central plants employing a certain amount of machinery for the actual mixing and sacking.

The preparation of the bait for field distribution required the addition of water by hand labor, and it was while doing this work that the cases of poisoning upon which this report is based occurred.

In all, seven members of a CCC camp in western South Dakota, who were assigned to the duty of preparing "hoppercide" for field distribution, received sufficient arsenic through absorption by the skin to develop a definite arsenical dermatitis on the feet and legs. One of these cases terminated fatally; the six others have not exhibited alarming symptoms, yet all of them showed arsenic in the blood stream 270 days after the inception of the poison. The amount of arsenic was determined by the Gutzeit method and ranged from a trace to as high as 1.1 mg. per 100 cc. of blood and from a negative result in the hair to as much as .01 mg. per gram of hair.

The instance of poisoning which resulted fatally occurred in the case of Orin Truman, a young man of 22 years of age, in good health and weighing 150 pounds. He was a member of the CCC Camp at Bear Lodge, South Dakota, having been regularly assigned and inducted into the CCC service at Watertown, South Dakota, on or about April 1, 1934.

About June 1, 1934, he was assigned to duty under the supervision of Theodore Kruger, Supervisor of the Forestry Department in Wyoming, and, together with other members of the unit, was engaged in the prepration of mixing "arsenic bait." His specific duty was the screening of the bran mixture and the subsequent addition of water thereto, the final mixing being accomplished by shoveling the moistened material over and over in the bin.

The patient is reported to have worked in this bin for a period of 15 days. He was then assigned to the duty of painting for approximately one month's time, during which period he developed a characteristic arsenic rash on his feet. This was treated, resulting in the complete eradication of the rash and sufficient recovery of the patient to permit him to be reassigned to duty.

In a short time the patient complained of violent headache in the frontal sinus regions, and was subsequently admitted to the hospital at Fort Meade, where a diagnosis of acute sinusitis was made. He was treated by the physician in charge for the ailment and at the end of ten days was returned to camp for duty. At this time the patient complained of extreme fatigue and was unable to do heavy work. However, there were no marked symptoms developing until October 25, 1934, when the patient complained of poor circulation in the lower extremeties and a loss of appetite. There was also a slight loss in weight.

Light duty was continued until the patient was granted a voter's leave on November 2, when he returned to his home in Bryant, S. D. On his return home, it was quite apparent that there was developing a definite paralysis of the lower extremeties which was characterized by a shambling walk and an improper flexing of the ankle joints. The patient continued to loose weight and found it increasingly difficult to take normal nourishment. In a short time there were marked gastric disturbances resulting in vomiting after each meal. At the same time there were intermittent periods of diarrhea accompanied by severe abdominal pain. At times the abdominal wall was tympanitic and extremely irritable to the touch. At the same time there appeared periods of profuse lacrimation, although there was no apparent inflammation of the conjunctiva.

Definite diagnosis of arsenic poisoning was made by Dr. G. L. Hickman at Bryant, S. D., and the same was later confirmed by Dr. C. V. Lendren, of Estelline, S. D., who made a positive confirmation of chronic arsenic poisoning by detecting arsenic in the voided urine.

On November 26, 1934, Orin Truman was admitted to the Luther Hospital at Watertown, S. D., and placed under the care of Dr. Finn Koren, who, together with his associates, further confirmed the symptoms of arsenic poisoning. The patient had at this time lost considerable weight and gave marked symptoms of emaciation. The patient responded to treatment, with marked improvement noted for a short time after being admitted to the hospital.

On December 3, I made a qualitative examination of 200 cc. of urine by the Gutzeit method, but was unable to detect even a trace of arsenic in the eliminated fluid. On January 11, a quantitative examination of the blood and hair was made, showing a concentration of two mg. of arsenic trioxide (As_2O_3) per 100 cc. of blood and five mg. of arsenic trioxide per 100 gm. of hair. This clearly indicated that arsenic was definitely stored in the tissues but was not being eliminated at the time of the examination of urine on December 3.

Subsequent analysis of the feces on January 19 showed .3 of a mg. per 100 gm., although it must be stated that the fecal material was for the most part made up of glucose solution which had been administered as a means of introducing fluid into the system.

Laboratory findings as reported by the hospital technician were as follows:

November 26:

Urine—

24-hour specimen—1,000 cc.
Sp. Gr.—1.010.
Yellow—cloudy.
Alkaline reaction. Sugar, none.
Albumin—1 plus. Bile pigments, neg.

Blood—

R. B. C.—3,780,000; Hgb., 68.
White—18,000.
N. P. N.—Not taken.

December 26:

Blood—

Hgb., 55; whites, 20,000.
Total gastric acidity, 23.

Despite every effort of medical treatment to relieve the patient, he died on January 22, 1935. On that date post-mortem examination revealed definite macroscopic lesions in the lungs, mesenteric tissues, the kidney and some degeneration of the liver. The mucosa of the stomach and duodenum was not greatly inflamed. However, the small intestine, from the junction of the common bile duct to the rectal region, was definitely hemorrhagic in character and also had the characteristic arsenic sulphide coloration in the small amount of fatty tissue of the abdominal wall, the mesenteric structure and the tissues surrounding the gall bladder. The omentum was almost entirely erroded, the spleen was slightly enlarged but showed no macroscopic pathology. The bile was extremely viscid and very dark. Twenty-two cc. of fluid was removed from the pericardium and all the blood from the chambers of the heart was reserved for examination. The blood was extremely fluid although there was definite indication that the blood volume of the body had been greatly reduced. The capillaries of the surface area of the body were definitely paralyzed preventing venous circulation. In all, 16 quantitative examinations and one qualitative examination were made on the tissue and organs of the body of the patient with the results as herein appended:

ESTIMATED TOTAL AMOUNT OF ARSENIC STORED IN THE TISSUES AND ORGANS OF PATIENT AT TIME OF DEATH—JANUARY 22, 1935

					Est. Total
Blood from heart	1.8	mg. per 100 cc.			77.5 mg.
Kidney	2.	mg. per 100 Gm.	× 1.36	=	2.72 mg.
Abdominal wall	.025	mg. per 100 Gm.			
Heart—left ventricle	2.	mg. per 100 Gm.	× 2.	=	4.00 mg.
Heart—right auricle	.01	mg. per 100 Gm.	× .3	=	.30 mg.
Lungs	.01	mg. per 100 Gm.	× 2.5	=	.25 mg.
Pericardial fluid	2.	mg. per 100 cc.	× .22	=	.44 mg.
Bile	2.3	mg. per 100 cc.	× 1.	=	2.30 mg.
Duodenum	None				
Stomach wall	Trace				
Omentum	.0001	mg. per 100 Gm.			
Spleen	.01	mg. per 100 Gm.	× 1.62	=	1.62 mg.
Liver	.03	mg. per 100 Gm.	× 16.93	=	5.08 mg.
					94.21 mg.

The results of the examinations made during life are as follows:

Urine—December 3, none in 200 cc.
Blood—January 11, 2 mg. per 100 cc.
Hair—January 11, 5 mg. per 100 gm.
Feces—January 19, .3 mg. per 100 gm.

A review of the facts as established in this case clearly indicates that arsenic trioxide can be absorbed through skin in sufficient quantity to induce toxic reactions, and unless eliminated from the body or reduced to non-toxic levels, will produce a fatal reaction.

The storage of arsenic in the tissues of Orin Truman and the six other camp enrollees, approaches, if it does not exceed, the longest period of storage yet reported in literature.

Assuming that the incidence of poisoning in the case of this patient began about June 10, 1934—226 days elapsed before his death at which time his blood showed 1.8 mg. of As_2O_3 per 100 cc.

It is also interesting to note that the blood plasma and related fluids of the body stored the largest amount of the arsenic with the exception of the hair. In fact, there is every indication of a nearly constant level of combined arsenic in the blood, bile, lymph and pericardial fluid.

Since the whole blood contained slightly less than the bile or lymph, it may be assumed that the arsenic is combined with the proteins, probably lecithin.

The absence of arsenic in the urine on the third of December is evidence of the fact that the kidney is limited in its power to go beyond a certain point in the excretion of organic arsenic and the analysis of urine should not be accepted as a criterion of the progress which the patient may be expected to make.

The disappearance of the dermatitis is likewise a false indication in predicting the decline of the arsenic content in the blood as is evidenced by all seven of the cases cited in this discussion. In fact, it rather marks the instance of further penetration into the deeper tissues where poisoning has arisen

from skin absorption. It is essential, therefore, that one make a chemical examination of the blood which may be accomplished about as readily as a blood sugar determination. Such a procedure would, I believe, remove some of our difficulties in the administration of organic arsenicals in the treatment of syphilis.

In this discussion, I have purposely omitted the symptoms of poisoning as they were typical of all chronic arsenic poisonings.

However, there are certain phases of the toxicology of arsenic poisonings evident in this case which demand scientific attention. There was sufficient vaso-constriction of the skin capillaries to preclude venous circulation to such an extent that intravenous therapy was impossible. There was marked evidence of a central stimulation of the vomiting center preventing the ingestion of food. Intensive peristalsis in the large gut excluded rectal medication, hence a death due to starvation is the inevitable result of what one may expect from chronic arsenic poisoning.

I am indebted to Dr. L. R. Truman, father of the stricken youth, for permission to report upon this unusual case.

I am further indebted to Captain Fred Weichman, of Fort Meade, for certain official information, to Drs. Koren and Jorgenson, of Watertown, for the collection of specimens used for analysis, and to Mr. Orville Peterson for assistance in the chemical analysis of the same.

COMPLICATIONS OF PREGNANCY*

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IT HAS been stated in this country and abroad, that, in spite of the definite improvements and advancements of medical standards and practice, there has been no corresponding progress in the reduction of maternal deaths. Maternal mortality figures for the United States as a whole will substantiate this statement. It is not true in many individual states, including your own state of North Dakota, where there has been a real reduction in maternal mortality from 54 deaths for 10,000 live births in 1927 and 1928 and 55 per 10,000 in 1929 to 46 per 10,000 in 1932 and 49.8 per 10,000 in 1933.

It is an accepted fact that we are all anxious to lower our maternal death rate, and as a logical approach, go into meticulous detail in the study of our own states obstetrical situation, seek out its flaws and discrepancies and make every endeavor to remedy undesirable features as they become evident. We must remember that we have a tendency to think only in terms of mortality and that the morbidity factors are just as important, as many women who suffer *irrepairable* damage during pregnancy, labor and the puerperium do not die, but go on in chronic invalidism.

If we can accept the principle of improving our own local situation under the conditions with which we have to work, let us consider some of the pertinent facts concerning maternal deaths in the state of North Dakota as stated in publication No. 223 of the United States Department of Labor for 1927 and 1928, Mortality Statistics of the United States Department of Commerce for 1929 and 1930 and the unpublished figures for 1931, 1932 and 1933 for which only gross figures are available.

These careful statistical studies show puerperal sepsis, the toxemias of pregnancy and puerperal hemorrhage to be the major factors in the etiology of maternal deaths.

The statistical data for 1927 and 1928 are complete and show that 60 women died of puerperal sepsis. Twenty-five of them died during the first two trimesters of pregnancy and thirty-five died during and following the last trimester. In subsequent years, up to and including 1933, there has been an appreciable reduction of this factor. An analysis of these cases shows that about one-half follow abortion and the accidents of pregnancy in the first two trimesters and the remainder follow induced labor and delivery at term.

We must, then, consider abortion, from any any cause, a serious complication of pregnancy. There are no available figures that accurately state the number of abortions that are self-induced, criminally induced, or spontaneous in onset, though we can be very certain that in large urban communities, the percentage of induced abortions is high. During the past five years, at the Minneapolis General Hospital, we have treated 1,507 cases of abortions of all types, of which 40 per cent would be a conservative estimation of the criminally and self-induced types. Because of this frequency in having to treat the potentially infected and more often the definitely infected patient, we have followed a principal of considering every patient having an abortion as infected. This means conservative

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consideration and the avoidance of any intrauterine manipulations unless the bleeding is so severe that we are forced to enter the uterine cavity.

Our procedure consists of the removal, under aseptic technique, of any tissue projecting below the internal os, and bed rest with elevation to promote drainage. We do not pack the vagina unless bleeding is severe or the uterus unless fatal hemorrhage is occuring. Oxytocic drugs are used as indicated. When severe infection and anemia are present, we resort to frequent small transfusions of whole blood. Rectal examinations are made infrequently but often enough to determine the condition of the pelvis and to detect abscess development. If abscesses develop, we drain them at the most accessible point.

We find that most of our patients readily respond to this treatment, and are discharged after bleeding stops, the leucocyte count returns to normal and after there is no reaction to examination. About one-third of those, we believe to be complete will return at a later date because of bleeding. They are then curetted after it has been determined that no infection exists and that they are otherwise safe for the procedure. These patients usually stand this operation with few, if any, untoward symptoms.

The result of our conservative treatment shows that there were 13 deaths, a percentage of 0.86. From the standpoint of institutional practice, we find this method most satisfactory, but there is some disapproval on the part of our patients because of the time taken in getting them well, a fact that is insignificant in comparison to safety. It seems to me that the universal adoption of a conservative, "hands off" principle and the education of the public to such methods, will do much to eliminate many deaths from induced abortions.

Infections during and following the last trimester of pregnancy are most often associated with the premature termination of pregnancy, spontaneous and induced and operations designed for the termination of pregnancy and labor.

It is a recognized fact that in this consideration, the prevention of infection is of the utmost importance. Meticulous surgical asepsis should be maintained throughout labor and delivery, the avoidance of vaginal examination and other contamination of the genital tract, and the use of sterile gloves and drapes seem too obviously necessary to mention, though, as a matter of fact, they are often dispensed with. We must soon come to recognize that the conduct of a delivery is a surgical procedure and until we come into full appreciation of this fact, we will continue to have high percentage of infection.

Statistics definitely show that there is a greater incidence of morbidity and mortality from infection following operative deliveries. No one can deny that the frequency of obstetrical operations is too high. I do not believe that its incidence should be greater than six per cent, and as evidence of this, I submit the incidence of elective operations in 7,549 patients delivered in the Minneapolis General Hospital during the past five years. There were 412 or 5.47 per cent of operative deliveries during this time and 94.5 per cent spontaneous births. As to the effect on both mothers and babies, I have been unable to find by the most careful obstetrical follow-ups any justification for a more liberal interpretation of our operative indications. In spite of the low incidence of operative interference, we have had a febrile morbidity of 6.5 per cent and six maternal deaths, a percentage of 0.07, due to puerperal sepsis.

It is often stated, that hospital procedures are impossible in the home, and further, that they are unnecessary; statements are made that in spite of the lack of adequate technique as measured by hospital practice, infections are rare and an individual never sees infection or a maternal death due to infection. If we remember that the sample of obstetrics in the practice of a single individual is relatively small when compared to the total number of births, and, that it is the total of every individual's experience that give us our morbidity and mortality figures, we can easily see that no one person's experience is sufficient to justify the abolition of an accepted surgical or obstetrical principal.

Elaborate preparations for labor and delivery are not necessary, many modifications of hospital technique are simple and adequate, and, whether in hospital or home, our fundamental principals need not be violated.

The toxemias of pregnancy are second to infection in the causes of maternal death. These include hyperemesis gravidarum, pre-eclampsia, and eclampsia. Hyperemesis gravidarum occurs in one per cent of the obstetrical patients we treat in the Minneapoils General Hospital. Our points of emphasis in the management of these patients are: early hospitalization with complete isolation from relatives and friends, early differentiation between the definitely toxic and benign forms, sedatives and high carbohydrate intake, and, by suggestion and encouragement, building up of

nutrition to the normal level. Definite toxic symptoms as jaundice, persistent fever, and nervous and mental symptoms demand the termination of pregnancy as soon as possible. We have had to terminate only one in 77 patients of this type.

Pre-eclampsia has occurred on our service in 232 patients or 3.07 per cent in the past five years; 18 or 2.4 per cent were at term and went into spontaneous or induced labor. Thirty-three of these patients were delivered by operative means. There were no deaths in this group. Forty-five patients were hospitalized before term. Their treatment consisted of rest, elimination and symptomatic treatment following which they were discharged and returned later in normal labor. We believe that pre-natal care, early hospitalization before symptoms become severe, and symptomatic treatment will do much to minimize danger from this source, and ward off an eclamptic seizure.

It has been stated repeatedly that eclampsia is a preventable disease. I do not believe this is entirely so, because of the small group of patients who develop an eclamptic seizure or suddenly go into coma and die with extremely mild or no toxic signs or symptoms. It should be stated that eclampsia is largely preventable, by careful pre-natal care.

The prevention of eclampsia is by far the most effective means in reducing maternal mortality from this cause. The active treatment of eclampsia is directed by two schools. One favors immediate delivery by operative means, and the other, represented by Stroganoff, disregards the pregnancy and treats the condition symptomatically until the patient clears up or is in condition for safe termination of pregnancy. We favor the latter, as, in our hands, it has given the best results. We have treated 28 patients with ante- and intra-partum eclampsia and five patients with post-partum eclampsia during the past five years. There were six deaths in the group, better than 18 per cent but equivalent to the figures of Stroganoff. Careful evaluation of these patients shows that most of them were preventable had they been recognized early.

Chronic nephritis complicated by pregnancy is a serious condition. It must be recognized early and, when found, the pregnancy should be terminated. Here again the importance of pre-natal care is obvious and *cannot be overestimated.*

Hemorrhage during pregnancy, labor and the puerperium was responsible for eight per cent of the maternal deaths in your state in 1927 and 1928. Since that time, the exact number and cause of hemorrhages are not available in detail.

Serious hemorrhage during pregnancy, excluding abortion, occurs most often in the last trimester of pregnancy, and is most commonly due to premature separation of the placenta, and placenta previa.

I believe the most common cause of abnormal bleeding in the last trimester of pregnancy is some degree of separation of the placenta. This bleeding, in spite of text book description, is not necessarily accompanied by pain, and may vary from a bloody show or bleeding equivalent to a menstrual period to alarming hemorrhage leading to shock, depending upon the amount and rate of blood loss. Indeed no external bleeding of any kind is necessary as it may occur entirely within the uterine cavity, where it produces continuous abdominal pain and board-like rigidity of the uterus with pallor, thirst, rapid pulse and signs of shock. Aside from traumatic injury the etiologic factors are diseases affecting the placenta as pre-eclampsia, eclampsia, syphilis, abnormal placental development, chronic nephritis, and tumors of the uterus, especially myomata. All of these conditions should be recognized early in pregnancy, and treatment carried out with apprehension for abnormal bleeding developing at any time.

Painless bleeding usually occurring during the last trimester is most suggestive of placenta previa. Rectal examination and x-ray examination according to the technique of Ude and Urner will establish or rub out the condition without any contamination of the genital tract and allow appropriate treatment to be given, depending upon the type of pelvis, the viability of the baby and the condition of the patient.

The most important considerations are early hospitalization and observation, early blood groupings with readily accessible donors and having the patient in readiness for treatment where rapid preparation and delivery can be aseptically carried out.

Post-partum hemorrhage must be considered largely as preventable. The proper care of the third stage of labor by giving pituitrin following delivery of the baby, and avoidance of massage of the uterus to produce separation of the placenta, the recognition of placental separation and gentle manual expression following placental separation, will, to a large extent, reduce post-partum bleeding and overcome operative removal of the placenta, which is so often followed by infection.

The foregoing obstetrical complications which so definitely affect maternal mortality and morbidity have the closest relation to pre-natal care and no amount of emphasis can be considered superfluous. The literature is filled with admonitions concerning its value and these need not be repeated here.

There are three phases of pre-natal care, one, the actual treatment and the investigative procedures carried out upon the patient seeking pre-natal care, the education of the general public of the importance of early care, and, finally, the education of the patient to follow without question the advice given for her protection. The latter, has not received the amount of consideration it should. The profession is unfairly criticized for conditions taken out of their hands by the patient or relatives, whereas full co-operation of the patient would prevent untoward results.

In an investigation carried out upon 1,000 General Hospital patients who had received an acceptable type of pre-natal care, I found 16 per cent admitted indiscretions in the hygiene of pregnancy such as taking douches, and having intercourse after the seventh month of pregnancy. Twenty-five to 30 per cent were unable to follow dietary regimes because of economic conditions. A large number felt that advice was superfluous and nothing but urinalysis and blood pressure determinations were important.

This presented to me a very discouraging picture of the effect of our efforts and the co-operation of the patient. We cannot afford to decrease our efforts, as, by continuous hammering away, we will gradually educate more and more patients into the spirit of full co-operation.

In conclusion, permit me to state again, (1) that the state of North Dakota has shown a marked reduction in maternal mortality in the past ten years, and will show one of the lowest maternal death rates when its figures are published in the near future. This is a tribute to the medical profession of the state. (2) I believe that our greatest possibility in the lowering of maternal deaths due to infections is a conservative, "hands off" policy in the treatment of abortions, and post-partum sepsis. That pre-natal care and prevention by less operative deliveries and meticulous surgical technique will do much to lower maternal deaths from infection. (3) Pre-natal care for the early recognition and early hospitalization and treatment of the toxemias of pregnancy will do much to reduce the serious consequences of these conditions. (4) Pre-natal care and the earliest possible hospitalization for the patient showing abnormal bleeding will do a great deal to lessen mortality from this cause. (5) The education of the general public not only to the value of medical care but to *absolute* co-operation in following advice, is in all probability the keynote in making real progress in the prevention of maternal deaths.

THE DIAGNOSIS OF ACUTE APPENDICITIS IN CHILDREN*

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THE diagnosis of acute appendicitis in childhood is probably one of the most difficult and important diagnoses that any physician dealing with children has to make. About half of the cases of appendicitis are seen in patients in the first twenty years of life. Of these, about five per cent are seen during the first five years, 13 per cent between six and ten years of age, 33 per cent between ten and fifteen years of age, and the balance between fifteen and twenty years of age. For the matter of grouping and diagnosis it is important that we consider the first five years as one group and the next ten years as another. The first five years are particularly important because of the mortality. Anywhere from eight to ten times as many patients die from appendicitis during the first five years of life as do in the next ten years. The difficulty of diagnosing appendicitis during this five-year period is great, and a study of various series has shown that in 90 per cent of cases of appendicitis at operation there was involvement of the peritoneum.

If we consider first of all the group of patients who are seen during the first five years of life, we are struck by two facts: the difficulty of making the diagnosis and the number who have perforated appendixes before diagnosis is made. The diagnosis is so difficult because we get practically no co-operation or information from the patient, and we must make the diagnosis essentially on physical findings, and those usually appear after there has been perforation through the appendiceal wall. The younger the patient with an inflamed appendix, the more frequently the diagnosis has been made of peritonitis rather than appendicitis.

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What is there during this first five-year period that may help us in making a diagnosis? First of all we should think of appendicitis when we see a child with an unusual condition which is difficult to interpret. It may be a matter of discomfort in a child that is crying and restless. Of the other conditions that might be a cause of such restlessness, probably infection of the middle ear is the most important. After an acute otitis media has been excluded, it is well to remember that some acute abdominal condition may be at the bottom of the discomfort. The child cannot tell you where it has pain. If a young child has a headache he is just as likely to tell you he has pain in the belly, inasmuch as that is the usual place for the hand to go. The child does not localize pain. All you know is that the child is uncomfortable, is restless, is crying, and does not sleep.

Most severe illnesses are not associated with restlessnes, if we exclude acute otitis media; so that if the child does not sleep, and will not let anyone else sleep, appendicitis must be carefully considered. We can judge only by reflex action. If a child when lying in bed has his right leg markedly flexed, he probably has some pain when it is extended. If you ask that child if he has pain, he will probably deny it; if he is frightened by the doctor he will not admit that he has pain anywhere. Recurring colic-like pain is another type of pain that we frequently see in appendicitis in the young. This type of pain is usually associated with intussusception, but in the absence of other symptoms typical of this condition, it should suggest appendicitis.

Vomiting may be indicative of appendicitis, particularly vomiting that continues without cause, without any explanation that you can find, often with very little if any tenderness or any apparent pain.

In the case of a young child, when little or no help can be obtained from the history in making a diagnosis, an even greater difficulty is often encountered in the physical examination, particularly in children from a year to two and a half years old. One must get the child's confidence before attempting any examination, and it is well worth while spending five or ten minutes getting acquainted with him first. Physical examination of the abdomen is worth just nothing if you do not have the co-operation of the child.

Local tenderness is the most important single finding in making a diagnosis, but for some reason tenderness is not always present, possibly because the appendix lies in a different position than McBurney's, possibly because peritonitis is more frequent, or because the younger the child the more difficult it is to determine the presence of tenderness. Sometimes it is possible to elicit tenderness by gentle pressure, sometimes by deep pressure. Putting a child in a warm bath is frequently a means of obtaining relaxation so that tenderness may be determined. The child may be unwilling or unable to relax. Frequently a mass will be present which one is not able to feel because of lack of co-operation on the part of the child. Sometimes if the child is covered with a blanket and the hand is slowly inserted under the blanket it is possible to get the child to relax.

Rectal examination of a child less than five years of age is usually of very little value. The child will scream when the finger is inserted and will continue to scream until it is removed. The exception is the well-trained child who, if carefully examined, will give dependable information.

The temperature is usually less than 101° F., unless there is peritonitis when it may be as high as 103° or 104° F. The leukocyte count is usually less than 20,000 per cubic millimeter, the polymorphonuclear leukocytes usually making up 80 per cent or more. A recent case is of interest: In this case the patient was three years old, and there were very suggestive findings of vomiting, abdominal pain, and transient tenderness at the onset, but when the child was seen two hours later, the vomiting persisted but the pain and tenderness had gone and no tenderness was found on rectal examination. After five hours there was only occasional vomiting. The leukocyte counts were 7,800 and 6,800 per cubic millimeter, with 83 and 82 per cent of polymorphonuclear cells, respectively, within this interval of five hours. There were no findings elsewhere in the body. The child made an uneventful recovery, but these counts gave us a very uncomfortable twenty-four hours.

The two things we must consider in the differential diagnosis of appendicitis which occurs in the first two years of life are intussusception and primary peritonitis. Intussusception usually occurs during the first year of life in children who are perfectly well. It comes on suddenly with acute, colicky pains that gradually subside, to return after a free interval with great severity. There is no fever. There is usually a mass which can be felt in the ileocecal region or in the colon. After a few hours there is bloody mucus in the stool. Not infrequently a tumor can be felt on

rectal examination. In those cases in which appendicitis is associated with a colicky type of pain the differential diagnosis is difficult. The high leukocyte count, the fever, and local tenderness help to make a diagnosis.

Primary peritonitis is extremely difficult to differentiate because an infection of the peritoneum may develop from rupture of a mesenteric lymph node, or by direct passage through the wall of the bowel (Durchwanderungs Peritonitis) just as it does from a ruptured appendix. It is usually a very acute disease, with high fever and rapid distention. The child is extremely ill. The abdomen is distended and rigid. The leukocytes vary from 15,000 to 75,000 per cubic millimeter. The picture is that of a severe intoxication.

Another condition which may be difficult to distinguish from an appendiceal abscess is one that starts as erysipelas of the vulva. It spreads up the genital tract and a mass may develop in the right side of the pelvis which is easily confused with an appendiceal abscess.

A fourth condition which must be distinguished from appendicitis is mesenteric lymphadenitis. It is practically impossible to differentiate these two by the symptoms and signs; nausea, vomiting, pain, tenderness, leukocytosis, and fever being the same in both. There is enlargement of the mesenteric lymph nodes which may be general, but it does not arise from infections of the appendix. In these cases of lymphadenitis there may be only slight involvement of the appendix, so that if the true condition is recognized the patient may be saved from an operation. It is well to remember, however, that in a case of this kind it is far better to remove an appendix for lymphadenitis than to treat an acute lymphadenitis until after the appendix has ruptured.

If we pass on to the group between the ages of five and fifteen years, we are in a much better position to make a diagnosis, because we do have the help and co-operation of the patient who can give us the subjective findings. It is well to remember, however, that many of these patients have heard of operations and about going to the hospital, and they are fearful of a doctor and fearful of operations, so that they may try to hide the fact that they have pain in the abdomen. They will tend to minimize any tenderness they have.

Porter found upper respiratory infection preceding appendicitis in 50 per cent of his cases. Others have found it in a lower percentage. The appendix has a large number of solitary lymph follicles which may, as the result of an infection elsewhere in the body, be enlarged. The swelling of the follicles encroaches on the lumen and any fecalith will be more likely to occlude the appendix than if the swelling had not taken place; in addition, the infection may also cause swelling of the mesenteric lymph nodes. So we have as the result of the respiratory infection a local factor in the appendix and a swelling of the mesenteric lymph nodes. The onset is usually sudden. Nausea, vomiting, and abdominal pain, usually in the region of the umbilicus, are the symptoms at the onset. The pain is probably caused by distention of the appendix and is referred to the gangliar region. Only when the inflammatory reaction involves the peritoneum are local symptoms manifest in the right lower quadrant. The initial pain may be localized in the right lower abdominal quadrant. Usually there is constipation, although in an exceptional case there may be diarrhea. This may be the result of enteritis or some parenteral infection.

On the other hand the diarrhea may be the result of local infection in the appendix. The retrocecal position of an inflamed appendix frequently gives rise to diarrhea as a symptom. As the appendix becomes inflamed, the inflammatory reaction stimulates peristalsis in the adjacent colon, giving rise to diarrhea. In one case it was the only symptom of appendicitis: The child had on three occasions loose bowel movements between 10 p. m. and 6 a. m., and no other symptoms. He had had a good appetite. On examination the morning of the third attack exquisite tenderness in the right lower quadrant was found on deep pressure. The leukocyte count was 20,000, and 85 per cent of the leukocytes were polymorphonuclear. Several days later a long, inflamed appendix, which extended four inches (10 cm.) along the ascending colon, was removed. Because of this symptom of diarrhea, we have been able to localize the inflamed appendix as being in the retrocecal position in a number of cases. Gentle pressure does not usually elicit any tenderness, and only as one gets deep down over the region of the appendix is there a complaint of pain. It is surprising to see how many cases there are without muscle spasm.

Unquestionably the omentum may come down, and even within the first twenty-four hours a mass may develop. That is important from the differential point of view and will be taken up later. I cannot emphasize too greatly the im-

portance of rectal examination in localization of pain, particularly in those cases in which differentiation of referred pain is of so much importance; that is, in those cases in which there is irritation of the diaphragmatic pleura as in pericarditis and in pleuritis. Here again it is important to get the confidence of your patient, and it is well to take time explaining to the child all that you are trying to determine by rectal examination—whether or not there is more pain on one side or on the other. In most instances you can get his co-operation.

The temperature may be of almost any height, but in uncomplicated cases it is usually less than 101°, and as a rule is between 99.5° and 100.5° F. There may be other cases in which the temperature is considerably higher. The leukocyte range is rather low, usually somewhere between 12,000 and 20,000 per cubic millimeter with a differential count of 75 to 90 per cent polymorphonuclear cells. The leukocyte count may in some uncomplicated cases run as high as 40,000 with 90 per cent polymorphonuclear cells, but that does not occur very often. In only a very exceptional case has the leukocyte count been low and the differential count normal. The low counts are usually associated with an increase in the polymorphonuclear elements to 80 per cent or more. In a recent case I was very uneasy because of two counts of 7,000 and 6,420, with 82 and 83 per cent polymorphonuclear leukocytes, and attacks of vomiting; but there was no pain except at onset and no tenderness. The Schilling blood count has not been of any greater value than the differential count.

So much for the average case of appendicitis. The variation in the local symptoms of appendicitis is related to the different positions that the appendix may occupy. It may be found almost anywhere in the abdomen but the left upper quadrant. Owing to lack of rotation of the cecum, the appendix may be found in the epigastrium, the right upper quadrant, or the right lower quadrant; it may lie perfectly free, and any perforating inflammation may give rise to general peritonitis. The appendix of children is longer and larger than that of adults, and it has a funnel-shaped entrance into the cecum, so that material enters into it more readily. The ease with which material may enter it, together with rapid swelling of the large lymph follicles, makes it very easy to have a fecalith obstruct the lumen and produce a backing up of material within the appendix, resulting in necrosis and perforation. Adhesions may produce right-angled knuckles on the appendix which give rise, because of damming back, to a very short attack of appendicitis lasting only a few hours. I recall one such case in which the entire attack lasted only two hours. The surgeon did not see the patient until three hours from the beginning of the attack, and all symptoms were gone; the temperature and leukocyte count again were normal. After three such attacks the patient was finally operated on and when the appendix was removed, it was found that adhesions had produced the right-angled kink. The terminal half was almost twice the size of the proximal half, and as it swelled, it stretched the adhesions and discharged its contents, and the attack was over. The appendix may be back of the bladder, over the bladder, or the tip may be found in the left lower quadrant. If there is no tenderness in the right lower quadrant it does not exclude the appendix as the source of trouble.

The etiology usually is bacterial; the colon bacillus and streptococcus are usually found. Just a word about pin-worms as a cause of appendicitis. No doubt in the milder group it plays a rôle; it gives rise to irritation by invasion of the appendiceal wall. In cases of oxyuris appendicitis pain is the outstanding feature. The tenderness is usually very much less than in the bacterial form, although the temperature and leukocyte count are the same. The worms are found as balls in the appendix, usually in the tip, but they may be found in the wall.

In the differential diagnosis we have to consider first of all those conditions associated with pain in the right lower abdominal quadrant: pyelitis, ureteritis, and pyelonephrosis. They may be definitely associated with tenderness in the right lower quadrant. The absence of pus and bacteria in the urine will rule out urinary infection. It is well to remember that an inflamed appendix may give rise to ureteritis and bacteria in the urine, so that if the case does not run true to form, there is a possibility that the appendix may be the source of the trouble. An acute inflammatory appendix in contact with the bladder may give rise to the findings suggestive of cystitis. Undoubtedly the one condition that gives the most difficulty in the differential diagnosis is mesenteric lymphadenitis. In tuberculous lymphadenitis the symptoms are of a more chronic nature, such as recurring attacks of tenderness and pain, whereas acute swelling of the lymph nodes, particularly of that node which lies in the angle between the cecum and the ileum,

which is usually three or four times its normal size, will give symptoms and signs that are practically identical with those of appendicitis.

Renal tumors, lymphosarcoma, or enlarged lymph nodes may give rise to symptoms that are very much like those of appendicitis. A case of leukemia was recently encountered in which the child had a mass in the right lower quadrant. Symptoms were present for twenty-four hours. The leukocyte count was 56,000 per cubic millimeter, with no increase in the polymorphonuclear cells. A mesenteric cyst may give symptoms of extremely severe pain of short duration suggesting appendicitis. Osteomyelitis of the ileum may also present a picture that is difficult to differentiate from appendicitis. Finney cited a case of osteomyelitis of the upper femur simulating appendicitis, and I recently saw a case in which the appendix had been removed for the same condition.

In the prodromal stages of the acute infectious fevers the sudden onset with nausea, vomiting, abdominal pain, and local tenderness, make it difficult to evaluate the findings unless one has a carefully taken history. A measles rash twenty-four hours after appendectomy may explain the condition. Findings of value in the differential diagnosis of pneumonia of the right lower lobe and appendicitis are given in table 1.

In spite of the differential points given in table 1 the question of diagnosis is often a difficult one. The diagnosis can be further complicated by the presence of both respiratory infection and appendicitis. When in doubt it is far better to remove the appendix from a patient with a developing pneumonia than it is to allow an inflamed appendix to rupture in a case in which the patient is being treated for pneumonia.

Summary

The younger the child the more difficult the diagnosis of appendicitis.

Inflammation of the appendix is the most common acute condition of the abdomen needing immediate surgical attention.

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TABLE 1
DIFFERENTIAL DIAGNOSIS OF PNEUMONIA AND APPENDICITIS

	Pneumonia	*Appendicitis*
Pain in chest:	Present.	Absent.
Facies:	Dilation of ala nasi.	Not characteristic.
Respiratory symptoms:	Abdominal breathing.	Costal breathing.
Respiratory signs:	Grunt, distant breath sounds, suggestive dullness.	None.
Vomiting:	In 15 per cent of cases.	In 70 per cent of cases.
Diarrhea:	Common.	Rare.
Abdominal pain:	Severe, constant, general.	Paroxysmal, local.
Abdominal tenderness:	Marked and superficial; no worse on deep pressure. Local.	Slight or severe; more marked on deep pressure. Local.
Rectal examination:	Negative.	More tender on right.
Leukocytes, per cubic mm.:	20,000 to 50,000.	10,000 to 20,000.
Temperature:	102° to 105° F.	100° to 102° F.
Roentgenogram of chest:	Shadow over right lower lobe.	Negative.

SOUTH DAKOTA STATE SOLDIERS' HOME

P. T. Geyerman, M.D.
HOT SPRINGS, S. D.

THE FIRST official cornerstone of the State of South Dakota, after it had attained statehood, was for the main building of the State Soldiers' Home and was laid at Hot Springs, November 11, 1889.

The building was completed and opened for occupancy on Thanksgiving Day, November 25, 1890, when ten Civil War veterans were admitted as members and Col. W. V. Incas was appointed commandant. In succeeding years hundreds of veterans have been enrolled and twelve men have held the position of commandant, or, as it is now called, superintendent, the twelfth being Captain Ray Fitzgerald who so ably holds the position at present.

The location of the institution in the beautiful valley of Minnekahta (Warm Waters) is ideal, with the buildings situated on a high slope among the pines, commanding a fine view of the surrounding country and the National Soldiers' Sanitarium across the canyon. The site was originally a rocky tract which has required much labor and expense to bring it to its present beautifully improved condition, making it a credit to the state.

The Home has always been under the control of a board of managers appointed by the Governor. The board appoints the superintendent, whose office encompasses the chief management of the Home and requires a man of sound executive ability and broad human interest.

With the passage of the years the original building has been supplemented with others, until the group of larger structures on the grounds, together with the cottages of employees, constitutes a little community in itself. Early in the

present century the increased age and infirmities of the Civil War veterans made a thoroughly equipped medical department necessary in the Home, and the legislature authorized the erection of a hospital building. At the present time the Hot Springs Clinic has charge of the medical and surgical work, insuring efficient care for the members and employees. The nursing staff is in charge of Miss Mary Buthala.

In the beginning the Home was intended only for veterans but as time went on many of the members brought their wives with them to the town and gradually, by a sort of unofficial sufferance, married couples were assigned cottages in the grounds and the women received the same maintenance as the men. There was then no provision for the widows of veterans, however. It is perhaps owing to the persistence of one woman, whose husband died in the Home and who refused to leave after his death, that widows were included in the first legal provision made for women when, in 1921, the legislature passed a law admitting the wives and widows of Civil War men.

In 1923 this law was amended to admit also the wives and widows of Spanish War veterans. In both cases the requirements were that the women must have reached the age of 60 years, must have been married to the veterans prior to 1905 and residents of South Dakota for two years previous to admission. The women were subject to the same rules concerning conduct, furloughs and discharges as the men, and were also granted the same half-fare rate on the railroads.

Opening the doors of the Home to the women in this way soon crowded its capacity to overflowing and in 1925 the superintendent, Col. W. S. Gray, and the board of managers asked the legislature for an appropriation to erect a new building. This was granted, and the new Womans' Building was opened July 1, 1926.

The money, nearly $200,000 was well expended and the new building is a handsome structure of dark-red pressed brick and is fireproof throughout. It stands four stories above the basement and contains 147 well furnished living rooms, with wide halls, open stairways, steam heat and a fine electric elevator which is always at the service of the members. The two lower floors are given over to married couples, while the upper stories are reserved for widows.

Four bathrooms, finished in white enamel, are found on each floor, and each floor has also a large, bright parlor where members can entertain their friends from outside or gather in their own social circles. The basement contains the dining room, kitchen and laundry, with drying and ironing rooms. Indeed the building contains every convenience of a modern home, even to a range where woman members can, if they wish, prepare special dishes at their own expense. The regular food served in the dining room, however, is of excellent quality and ample quantity.

The building contains a large auditorium for the use of the entire membership. The special stage fittings of the auditorium are unusually good and include a drop curtain costing $795 which was paid for by the local Womans' Relief Corps. Ever since the opening of the building this faithful body of women, numbering about 100, have been giving food sales, dinners and dances to raise money. Twice each week a good moving picture is shown at the auditorium, and religious services are held each Sunday afternoon. Community song fests are also events of interest.

The personnel of the Home administration is of high grade, both in business efficiency and in those more human qualities so necessary for the successful management of an institution of this kind. No kindness or care for the frail or sick is ever asked in vain. The quartermaster, S. B. Standard, the adjutant, Harry White, and the engineer, John Sweem, are all able men in their departments and with the 50-odd civilian employees under them, keep the machinery of the big home turning smoothly. The membership consists of 101 men and 94 women, so these with the employees make the Home a community of more than 250 people. The present Soldiers' Home Board is: President, William Guhin of Aberdeen; Vice-President, Verne Gotthelf of Barker; and Secretary, Mrs. Eva Sherburne of Madison.

An atmosphere of cheerfulness and content seems to prevail among the members. The men read, smoke, play games and enjoy themselves generally, while the women read and write letters, do fancy work, and make beautiful quilts and talk of the golden days of youth. One listening to them is surprised to learn how superlatively handsome the blue clad soldier boys of the 60's were and how many beaux grandmother had.

The women range in age from 60 to 90 and the men from 40 to over 90. While they are all residents of South Dakota, they are natives of almost every state in the Union. At their numerous gatherings these old people love to tell of their youth and the influences which have shaped their lives. Old age has failed to rub off the edge of personality and the ways of other days. Nearly

all of them are as keenly interested in the world of today as are their grandchildren, yet the visitor who passes the doors of the Home is conscious of stepping into the past—not a dead past—but a curiously live one.

Here are people who speak familiarly of slavery and blue-backed spelling books and tallow candles and a thousand things of days when the telephone and the automobile and the radio were as yet not even dreams. Many talk as eye-witnesses of such remote events as the Lincoln-Douglas debates, Gettysburg, Appomattox and the dreadful night of the assassination in Ford's theatre. Such historic scenes were so burned into their memory by the heat and stress of those heroic days that the passing years serve only to sharpen their outlines, while gradually dimming matters of later times.

The career of the State Soldiers' Homes is just started, as it were. The Leonard-March bill entitles the wife of any veteran not only Civil War but of the Spanish-American War, the Indian wars and the Philippine Insurrection to be admitted to the Home with her husband provided she is 60 years old, and also grants membership to widows of such veterans. Certainly the patriotism and enterprise of South Dakota is well exemplified by the generous provision for her beloved veterans and their dependents.

CASE REPORTS

REPORT OF A CASE OF MESENTERIC THROMBOSIS RESULTING FROM INJECTION TREATMENT OF HERNIA

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THE TECHNIQUE of the injection treatment of hernia has been demonstrated and published rather frequently in the last year or two, but as yet few reports of complications that have developed have appeared in medical literature. Believing that it is very important that these complications be published, I am reporting this case of mesenteric thrombosis which resulted from this type of treatment, and which required excision of a segment of small bowel. The solution used was apparently injected into the mesentery of the ileum about six inches from the ileo-cecal junction. The case report follows:

J. C., age 55, was admitted to the surgical service at 5:00 A. M. on August 5, 1935. On admission he complained of abdominal pain and vomiting which had been present for twelve hours. The illness began suddenly with sharp, crampy pains around the umbilicus, which was followed by vomiting without relief of pain. The patient had taken an enema at home with fair results. Three days before his illness began, he had received his first injection treatment for bilateral inguinal herniae which had been present since he was 19 years old.

The past history was essentially negative.

Physical examination revealed a fairly well-nourished, middle aged male lying on his back with his knees flexed, complaining of severe abdominal pain. His temperature was 98.6, pulse 98, respirations 16 and blood pressure 118/80. Examination of the head, neck and chest revealed no abnormalities. The abdomen was slightly distended. Moderate tenderness to palpation was present on both sides of the umbilicus, as well as moderate muscle spasm in this area. Percussion revealed tympany over the entire abdomen. Auscultation failed to reveal any abnormal sounds. Rebound tenderness was present. No palpable masses were found. Bilateral indirect inguinal herniae were present.

Flat X-ray plate of the abdomen on admission revealed evidence of a small bowel obstruction. Examination of the urine was negative. The hemoglobin was 105 and the white count was 17,550. A diagnosis of acute intestinal obstruction was made.

Nasal suction was instituted. The patient was given extra oral fluids and sedatives. The day following admission his temperature was slightly elevated. The white count had dropped to 9,450 with 69 per cent P. M. N. s. Abdominal pain and tenderness remained about the same. On the second day following admission, because the patient failed to improve, an exploratory laparotomy was done under spinal anesthesia. A small amount of straw-colored fluid was found present in the abdominal cavity. The small bowel was dilated and hemorrhagic. A segment of ileum six inches long was discolored and dark in appearance. The mesentery adjacent to this area was indurated, hemorrhagic and the vessels within it appeared thrombosed. This piece of bowel was resected and an end-to-end anastomosis made.

Postoperatively, the patient's condition was uneventful except for some purulent drainage appearing at the inferior margin of the wound on the 10th day. The patient was allowed to be up and about on the 20th day postoperatively, and was discharged on the 25th day.

BOOK NOTICE

SAUNDERS' NEW DICTIONARY

The American Illustrated Medical Dictionary, by W. A. NEWMAN DORLAND, A.M., M.D., F.A.C.S., in collaboration with E. C. L. MILLER, M.D.; 17th edition, heavy red fabricoid, gold stamped, 1,573 pages, 945 illustrations (283 portraits); Philadelphia and London: The W. B. Saunders Company: 1935. Flexible and stiff bindings. Prices, plain, $7.00; thumb-indexed, $7.50.

COLONEL DORLAND, who is a member of the American Medical Association's Committee on Nomenclature and Classification of Diseases, has worked with PROFESSOR MILLER of the Medical College of Virginia to produce an outstanding medical lexicon.

For example, they have inserted more than 5,000 entirely new words in this 17th edition of a standard dictionary; they have prepared both anatomic tables and principal chemical formulas; they have provided methods of treatment, dosage and therapeutic tables, a section of 29 pages devoted to tests; an atlas of over 945 illustrations; and an extensive definition of dental terms.

This new 1935 edition of DORLAND'S work is well-printed, with sharp, clear illustrations. Yet it is not a bulky volume; it may be handled with great ease. It is safe to say that this lexicon now renders most previous volumes obsolete; and it would behoove the practitioner to provide himself with *The American Illustrated Dictionary.*

A HANDBOOK FOR LUETIC THERAPY

The Clinical Management of Syphilis, by ALVIN RUSSELL HARNES, M.D.; first edition, 71 pages, illustrated, cloth; New York City: The Macmillan Company: 1935. Price, $1.50.

This practical handbook of luetic therapy is unique in its field. The author has presented the treatment of the various forms of syphilis giving "the day-by-day and week-by-week tables of medication for a period of two and three years." In addition, the physician is presented with comparative methods of treatment using the various arsphenamines together with the best methods of their administration.

In the foreword, Dr. Grace calls attention to the emphasis placed upon certain cardinal points which are the every day currency of luetic practice, but which cannot yet be regarded as common medical knowledge or usage. Questions which arise in the mind of the occasional syphilographer are given special consideration by the author: When shall treatment be begun? How long shall treatment be continued? When are rest periods indicated? What of the syphilitic woman and pregnancy? What can be done for the "Wassermann fast" patient? What are the accepted methods for the treatment of syphilis of the central nervous system? The answers to these questions have been made available by the author in concise detail.

The philosophy of treatment preceding each chapter is well written; the illustrations are excellent and the book will prove a valuable asset in every day practice.

DR. H. MARK,
Ah-Gwah-Ching, Minn.

THE FOURTH EDITION OF KARSNER'S *PATHOLOGY*

Human Pathology: A Textbook, by HOWARD T. KARSNER, M.D., with a foreword by SIMON FLEXNER, M.D.; heavy red cloth, gold stamped, 971 pages plus references, and index, 18 illustrations in color and 443 in black and white; Philadelphia: The J. P. Lippincott Company: 1935. Price, $10.00.

Before the days of WILLIAM WELCH in America, pathology was based almost wholly upon morphology. Since the prime days of that great master, pathology has come to be one of the most comprehensive specialties in all medicine. It is frequently called into service when the infant gasps out its first inspiration, and it is applied during senescence of the adult, and subsequent to his death.

This textbook, with its illustrations taken for a large part from those of DR. SIMON FLEXNER, who at one time proposed to publish a work on pathology, is remarkable for the clarity of its presentation, and the orderly exposition of so intricate a subject. It is an excellent guide for the medical student, and a fine reference source for the physician. As is desirable, there is no great detail concerning such allied subjects as physiology, immunology, and parasitology. Likewise, the manifold processes of reactive and reparative phenomena have been necessarily curtailed in description, as required by the limits of a single volume.

The printing is exceptionally clear, and the detail of the plates and illustrations is sharp and definitive. It is a sound, well-written textbook, beautifully-produced.

A LAYMAN LOOKS AT A MENTAL HOSPITAL

Asylum, by WILLIAM SEABROOK; first edition, blue cloth, silver stamped, 263 pages, no illustrations; New York: Harcourt, Brace & Company: 1935. Price, $2.00.

WILLIAM SEABROOK, who has attained to some stature as a rather colorful commentator on the *mores* of faraway peoples, was a sodden drunk and made no bones about admitting it. He finally persuaded a friend to have himself admitted to a mental hospital (which, to serve as grist for popular consumption, he calls an "asylum"), and spent seven months within its walls.

Oddly enough for a man to whom some insight and perspicacity have been attributed, SEABROOK at first displayed toward his physicians the same stupid distrust and bewildered suspicion that characterize most unlettered and unlearned laymen. He cursed his physicians and browbeat his attendants. But he gradually lost his craving for liquor, and slowly grew well.

In January, 1935, when he had finished his book, his reason had revisited him so cordially that he was at last able to write: " . . . They seem to have cured me. . . . I am sure that there must be innumerable families who feel like doing something fairly desperate to save Uncle John or Brother Charlie from the well-known 'drunkard's grave,' but who would actually rather 'see him in his grave' than shut up in a 'madhouse.' I believe this medieval attitude is nonsense today, and one idea I have in writing this adventure is to show what nonsense it is."

Insofar as this objective is considered, SEABROOK has done a good job of it.

The
JOURNAL LANCET

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The Official Journal of the

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South Dakota State Medical Association
Montana State Medical Association
The Hennepin County Medical Society
The Minnesota Academy of Medicine
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THE PRACTICING PHYSICIAN AND THE PUBLIC HEALTH

The physician has no rival in health instruction. He not only knows the details of this work but also has many contacts with the people at the time they are most susceptible to health teaching. It is a well known principle in pedagogy that the best time to teach any individual or group of persons is when they are personally interested in a subject. There are few times when members of the family become so interested in health as when one of their members falls ill with a serious disease or when an epidemic of some communicable disease threatens.

As physicians, we frequently fail to take advantage of our opportunities to teach preventive medicine to the members of our clientele in our hurry to arrive at diagnosis and prescribe treatment. We can never control a disease by treating the sick alone. While it is important to treat those who are ill, we must go back to the cause and prevent others from becoming ill. No matter why the patient consults the physician, there usually is an opportunity to inform him concerning the communicability and prevention of disease, how inadequate diet leads to scurvy, rickets, etc. Often just an incidental statement or so serves to arouse the patient's interest.

In 1923, I saw a man of fifty years, who had suffered from bronchial asthma for a long time. The causes of the asthma were sought and treatment prescribed but advantage was not taken of the opportunity to discuss with him subjects, the public should be taught, such as the advantages of smallpox vaccination. This man had never been vaccinated. The next year he was exposed to smallpox; he developed the disease and died. His life could have been extended and exposure of others to him prevented, while he had the disease, if the subject had been properly presented to him at the time he sought help for another condition. A similar experience was that of a mother who was ill from a chronic condition which later required surgery. There were three small children in the home. There was ample opportunity to discuss the advantages of having these children immunized but no advantage was taken of it. A few years later, after she had completely recovered, her husband was sent to a hospital with pneumonia and just before the crisis when there was considerable question about his recovery, one of the children fell ill from diphtheria which needless to say was an unnecesary burden and added greatly to the mental anguish of the family.

Laws have made the prevention of ophthalmia neonatorium compulsory. This is not true of other communicable diseases; therefore, it becomes a matter for the medical profession to provide the public with the proper information concerning their prevention. On every physician's record sheets should be blank spaces for small-

pox vaccination, diphtheria immunization, etc., in order to prevent neglect of the discussions of these subjects when such an excellent opportunity exists.

During an epidemic in a community enthusiasm runs high and large numbers of persons are immunized and vaccinated. Following the epidemic, the vaccinal status becomes pathetic. The medical profession should not allow the interest of the public in health to wane. This means constant repetition of statement of facts. Laennec said: "Do not fear to repeat what has already been said. Men need these things dinned into their ears many times and from all sides. The first rumor makes them prick up their ears, the second registers and the third enters."

J. A. M.

PHYSICIANS OF SOUTH DAKOTA

Fifty-five per cent of the physicians of South Dakota owe allegiance to organized medicine. Again, this is not as it should be. It is to the interest of every physician in the state to unite with the organized profession, that concerted movement on the part of the profession may be brought about for the betterment of general as well as local conditions.

Reference need only be made to each legislative session when different cults and various forms of so-called medicine attempt to have special laws passed permitting them to be licensed through examinations which definitely do not conform to our Medical Practice Act.

The prevention of enactment of vicious legislation, the abuse of medical charities, the suppression of quackery and all the evils which have been an embarrassment and a handicap to the physician, including a reduction in his income to practically the vanishing point, can only be successfully combated by a co-operating and well organized profession in position to take a positive stand on these important matters.

Politics? Yes. There must be greater activity manifested on the part of the doctor in political affairs. There never will be a situation which will entirely relieve him of this responsibility. The medical profession must be in a position to govern itself or be mis-governed by others.

Very urgent and needed reform in our state, which has become the dumping ground for cults from other states with more stringent regulations, makes it necessary that a more complete organization with unanimity on the part of a greater proportion of the profession than now exists, be consummated. There should be no question that the welfare of the profession is entirely dependent upon the support given it and when well organized, carries with it also greater respect and better compensation.

These thoughts come to us at this time when officers of the State Association from the President down, are making a strenuous effort to bring about a more compact co-operating profession. Every registered physician residing in the state who is of good moral and professional standing, should be enrolled in the organized profession of the state and permitted to participate in the benefits and privileges of organized medicine.

The qualifications for membership are—Every reputable and legally qualified physician who does not practice nor profess to practice sectarian medicine and who is a bona-fide resident of the same county or district, shall be eligible for election to membership. S. M. H.

INSURE AND INDEMNIFY

Policy holders should know that insurance and indemnification are not synonymous terms. The average agent avoids discussing some of these fine points with his clients lest they be confused. Better by far that they be confused in the beginning, confused to the point that an explanation is demanded and the meaning understood.

Indemnifying means replacement. If the owner of a barn that burns down does not care to replace it, he cannot collect fire indemnity. If he does not care to enforce a collection, no debt insurance is payable. The injured person must exhaust every means of collection and sue at his own expense and if he then cannot collect, the indemnifying company pays his loss.

In case of insurance on the other hand, the company steps into the policy holder's shoes and fights the case for him. It releases any attachments that may have been made against him and his property and consequently preserves the credit of the insured, allowing him to carry-on without hindrance.

If the policy clearly states that the company "insures against and indemnifies for," then it must assume responsibility from beginning to end and that is the kind that a physician should carry. He must have tranquility of mind.

A. E. H.

AMBULANCES AND SPEED

It has long been a mystery to us why ambulances should be driven with so much speed and noise. In the case of police and fire vehicles there is every reason for hurry—no argument is necessary about that—but in ambulance service the situation is vastly different. In what percentage of accident or other emergencies is anything gained by the arrival of an ambulance surgeon or getting the patient to hospital a few minutes earlier? How often is life saved by a matter of minutes? Any surgeon of experience knows that in either instance, except in the rarest of exceptions, the advantage is negligable. This is much more than offset by the habitual practice of ambulances tearing through the streets at break-neck speed, disregarding traffic signals and running with their sirens screeching at full blast, night or day. Lives are endangered, traffic is held up and both well and sick people are awakened and disturbed by the excitement and the noise.

We believe in promptness, especially in medical matters where the peace of mind of the patient is to be thought of as well as the efficient handling of his physical needs. But surely this can be accomplished without all the scenery of a fireworks display to the accompaniment of a hurdy-gurdy. Emergencies seem to increase with the advance of civilization but at least we can meet them better with common sense and judgment rather than if we adhere to the ways of the savage and insist on the equivalent of drum beatings, incantations and blood-letting. G. C.

A REAL STATE MEDICAL SOCIETY

As medical societies are now conducted, those who wish to belong and support the organization by the payment of annual dues and the contribution of thought, time, and effort to make them amount to something, do so while others do not belong and reap the benefits of the work of the active members. No one can tell me that doctors wish to be that way. There must be some reasons for such conduct, other than the desire to avoid payment of dues.

How gratifying it would be if the medical examining board were a part of the state medical organization, and so soon as a doctor passed his examination he became a member of the state society and continued that membership during good behavior. That would make all doctors in the state members, and it would give the state association control of the members. The annual contribution could be smaller and dependable, and equitably-distributed. No one could practice medicine if he did not have a license, or was not a member. Irregular practices would be unknown. "Utopia!" you exclaim. There should be some way of arranging such an organization, and it is hoped that the A. M. A. will devote its time and energy toward creating this condition. It is a matter of satisfying legal requirements, which it should not be impossible to do. E. S. B.

SEX PERVERTS

Why do we avoid the sex pervert with such a shudder of disgust? Repulsive of course, but so were feces, the dissecting room and sulphuretted hydrogen. The medical student overcame his abhorrence when he found that analytical science recognized no filth.

This is not particularly a plea for gentle treatment. Perhaps some of them should be bumped off and many others have a boot forcefully applied to the *cauda equina*, but they should not be neglected any more than cases of scarlet fever or appendicitis. Whether we deal with physical impairment or mental obliquity, it is the medical man's concern. It is because of these very imperfections in the human race that the profession exists and it is a faint-hearted evasion of responsibility to sidestep duty, merely because of its unpleasantness.

A good teacher is not content to simply mark examination papers. The student who fails must be told of his error and not only how the mistake was made but also how to correct it. Early education is essential. We hear a lot about periodic examinations and prenatal care but very little about sex guidance of the young. Prepuberty instruction by the family physician is just as important as pre-school vaccinations. Trouble prevented needs no cure. A. E. H.

NEWS ITEMS

The Minnesota State Medical Association will hold its annual meeting at Rochester, May 3-6, 1936.

Dr. A. H. Stolpestad, St. Paul, was recently married to Miss Evelyn K. Gordon, of Minneapolis.

Minneota, Minn., will issue bonds for $10,000 for the erection of a community hospital in that village.

Dr. P. D. McCarty, Ely, Minn., was recently married in Chicago, to Mme. Delphine Sames-Schacht, of Virginia, Minn.

Dean E. P. Lyon of the University of Minnesota Medical School, recently returned from a several weeks trip in Europe.

Dr. Thaddeus Szlapka, a former member of the Mayo Clinic staff at Rochester, died at a Chicago hospital on October 1.

Dr. G. S. Cabot, Minneapolis, has moved to Jamestown, N. D., and joined the staff of the DePuy-Sorkness Clinic, of that city.

Dr. L. B. Moyer, Elgin, has purchased the practice of Dr. R. H. Leavitt, of Carson, N. D. and is now settled in his new location.

Brookings, S. D., are considering the erection of a $75,000 hospital in that city in the near future, if sufficient funds can be secured.

Blooming Prairie, Minn., physicians were hosts last month, to the physicians residing in Steele County, which brought out a large attendance.

The Blue Earth County Medical Society, held its October meeting at Mankato, Minn., with Dr. Edwin Bannick, Rochester as the guest speaker.

Members of the Billings, Montana, Medical Society have started making plans for the 1936 State meeting that will be held in that city next July.

Dr. Herbert P. Cole, who was born in St. Paul, but for several years has been in practice at Miami, Florida, passed away last month at the age of 55 years.

Renville County Medical Society opened their fall meetings at Olivia, Minn., with Dr. J. F. Weir, Rochester presenting a paper on "Diseases of the Liver."

Dr. E. Erickson, Halstad, was recently married to Miss Francis H. Fitzgerald, of Chisholm, Minn. Dr. Erickson is a graduate of the University of Minnesota.

Robert Errington, formerly of Fargo, N. D., was sentenced to jail and fined $300.00, when he pleaded guilty to a charge of practicing medicine without a license.

Dr. S. W. Harrington, Rochester, is in Paris this month, where he will be one of the principal speakers at the annual meeting of the French Congress of Surgeons.

Dr. Louis Allard, Billings, Mont., was honored by an invitation to meet President Roosevelt in a conference on infantile paralysis, at San Diego, Calif., this month.

Kansas City is already making extensive preparations for the annual meeting of the American Medical Association, which will open in that city May 16, 1936.

The thirtieth annual meeting of the Minnesota Nurses' Association was held this month in Minneapolis in a four days session, with many prominent national speakers on the program.

A large delegation of Twin City superintendents and managers of hospitals were present at the opening of the annual meeting of the American Hospital Association at St. Louis on October 5.

Dr. W. A. Fansler, Minneapolis, was the guest speaker at the September meeting of the Dubuque, Iowa, Medical Society. The doctor presented a paper on "The General Symptomatology of Rectal Disease."

Free public health lectures are held each Thursday evening, at the lobby of the Mayo Clinic at Rochester. "The Public and the Physician" was the subject presented at the last meeting by Dr. L. B. Wilson.

Over fifty members of the Southwestern Medical Association were present at their last monthly meeting held at Fulda, Minn. Dr. R. R. Knight, Minneapolis, was the principle speaker, his topic being, "Gall Bladder Troubles."

St. Josephs Hospital, Dickinson, N. D., has been completely remodeled and new equipment installed, making it one of the leading hospitals of the state. Over 1,600 visitors were registered on the opening day, September 24.

About fifty physicians, dentists, druggists and nurses met at Redfield, S. D., and perfected an organization for closer and better relations between the different professions. Dr. H. W. Sherwood, Doland, was elected president.

Dr. L. E. McFarlane, a graduate of the University of Minnesota, passed away at Rochester, Minn., on September 26, at the age of 40 years. Dr. McFarlane had been in active practice at Manhattan, Kan., for the last ten years.

The Minnesota Dietetic Association held its first fall meeting at Rochester, on September 30, with a very interesting program being presented. Tours were conducted through the Diet kitchen, Mayo Clinic, St. Mary's Hospital and Experimental Institute.

Three Twin City hospital heads were honored at the annual meeting of the American Hospital Association, held at St. Louis last month, by being named officers of the association, A. M. Calvin and Dr. F. C. Carter, St. Paul, and Jos. G. Norby, Minneapolis.

Two hundred members of the Inactive Duty Training Unit, United States Medical Reserve, sponsored by the Mayo clinic at Rochester, and consisting of physicians and surgeons from all parts of the United States, completed a two weeks of annual training at the Clinic and at Fort Snelling.

The new hospital at Jamestown, N. D., was dedicated on September 25, with many thousands of visitors inspecting the building. Dr. David Stoeve, Fargo, gave the main dedicatory address. The building is of fire proof construction, and furnished throughout with all the latest equipments that it was possible to secure.

The first fall meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, St. Paul, on the evening of October 9th, with the following program being presented: "An Unusual Case of Bone Atrophy of Both Bones of the Forearm," Dr. M. S. Henderson, Rochester; "Spinal Cord Injuries," Dr. E. M. Hammes, St. Paul, and "Reflex Urinal Frequency," Dr. F. R. Wright, Minneapolis.

The Minnesota State Medical Association broadcasts weekly at 11:15 A. M. every Tuesday over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota, is the speaker. The program for the month will be as follows: October 15, "Appendicitis"; October 22, "Water and Health"; October 29, "Dental Care."

Dr. Allen A. Agnew, International Falls, well known in the medical and surgical profession throughout Minnesota, died September 28 at Northwestern hospital after a month's illness. He was 44 years old. A graduate of the University of Minnesota medical school and a veteran of the World war, in which he served as a lieutenant in the navy medical division, Dr. Agnew entered practice at International Falls in May, 1921, and had followed his profession continuously until he became ill last August.

A special program of lectures and demonstrations in medicine will be held under the direction of The Mayo Foundation from November 11 to 15, inclusive. Mornings will be devoted to surgical and medical clinics. In the afternoons and evenings symposiums will be conducted on gastro-enterology, postoperative chest complications, hematology, diseases of the rectum and anus, treatment of syphilis, some aspects of endocrinology, and physiotherapy, including fever therapy. In addition, one clinic-pathologic conference will be held. While this program is arranged primarily for the Fellows of the Foundation, visiting physicians are invited to attend.

The Minnesota State Board of Medical Examiners has issued a warning to Mr. H. M. Shevnan, Chicago, who advertises himself as a rupture shield expert, to refrain from operating in the State of Minnesota. Mr. Shevnan is not registered under the basic science law and neither is he licensed to practice medicine in the State of Minnesota. Mr. Shevnan had advertised in a number of southern Minnesota newspapers that he would be at Mankato on September 24 and 25. The law was explained to Mr. Shevnan and he stated that he would refrain from continuing his activities in this state, rather than have the matter taken into court. He stated that he originally planned to make stops at Albert Lea, Faribault, Winona and St. Cloud. He promised that he would cancel these arrangements and return to Chicago. The State Board of Medical Examiners requests that it be notified in the event any advertisements appear any where in the State of Minnesota indicating that Mr. Shevnan has returned or will return to this state.

A night course in preventive medicine which began on Thursday, October 3, and is to continue each subsequent Thursday night from 6:20 p.m. to 8:00 p.m. for 17 meetings has been announced by Richard R. Price, Ph.D., director of the University Extension Division. Dr. Harold S. Diehl will direct the course, assisted by Dr. J. A. Myers, Dr. W. A. O'Brien, Dr. Elliott M. DeBerry, William A. Riley, Ph.D., Dr. M. H. Manson, Dr. R. G. Green, Dr. H. A. Whittaker, Dr. R. V. Ellis, and Dr. Ruth Boynton. Meetings will be held at 129 Millard Hall on the main University Campus. The fee for this course is $10.00. At 8:05 p. m., directly after the preventive medicine course, on Thursday evenings, Dr. J. Arthur Myers will give his course in Tuberculosis and Other Diseases of the Chest. This course will be given in Eustis Auditorium of University Hospital. The fee for Dr. Myers' course is likewise $10.00. Registration should be made at one of these three places: 402 Administration Building, University of Minnesota; 690 Northwestern National Bank Building, Minneapolis; or St. Paul Extension Center, 500 Robert Street, St. Paul, Minnesota.

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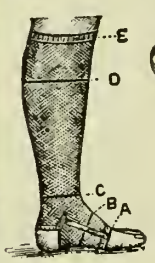
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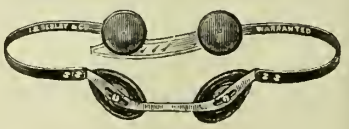
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INTRODUCTORY NOTE

The Cancer Problem*

William A. O'Brien, M.D.†
Minneapolis

THE CANCER problem is as old as man. Like many other problems, there is a tendency to lose interest unless it actively concerns us. The average medical practitioner does not see very many cancer patients in his practice. It has been estimated that the average figure is between three and four a year. In the survey of the cancer situation in Minnesota by Dr. F. L. Rector, field representative of the American Society for the Control of Cancer, it was found that there was one cancer death per year for every doctor in practice. In some counties, these figures were exactly equal, showing the local nature of the problem. Many physicians share the gloom and fear of the laity as far as cancer is concerned, probably because their contact with the cancer problem has been limited to a few hopeless victims, or those in whom recurrences came several years after apparent cure. It is interesting to note that the public and the profession alike have set up as an objective—absolute cure of all cancer patients. No such rigid viewpoint is entertained for the other degenerative diseases of middle and late life. In them, anything which helps the patient even temporarily is hailed as a great advance, while similar progress in the field of cancer treatment does not receive the recognition it deserves.

Very few diseases are as well-studied as cancer. Throughout the entire world, men and women interested in this problem are collecting figures on every phase of the situation in order that the effect of treatment may be scientifically evaluated. The most important consideration in cancer treatment is the periodic return of treated cancer patients for examination for signs of recurrence and the prompt treatment of such recurrences if this is possible. Cancer patients never seen or corresponded with after treatment do not help us in this important work. It has been found that the reaction of the family to a letter received from the physician several years after the death of the patient is not usually friendly. Cancer patients, like all other patients, like interest in their problems.

Not every physician is interested in cancer, either as a general problem or in his practice. There is a regrettable tendency in some instances to consider all cancer as incurable which prevents the patient from getting the opinion of a physician actively interested in this disease. Even though we do not care for cancer patients

*Prepared especially for THE JOURNAL-LANCET.
†State Chairman for Minnesota and Member of the Board of Directors of the American Society for the Control of Cancer.

ourselves, it is necessary as good doctors to have available information as to the proper treatment of each form and the place where such treatment is given. It is for this reason that medical journals and the medical societies are urged to have one cancer number, or one cancer meeting each year. In some states, one phase is discussed in every medical society at some time during the year.

The education of the laity is very important, but should not be stressed without corresponding professional education. Some time ago, when the cancer problem came into prominence, many lay meetings were held. It was found that this was a very good way of actually finding cancer cases, and also teaching the public about the early signs of the disease. Today, there is more emphasis placed on education of the profession, for very obvious reasons. It is remarkable the amount of information the average layman has about the subject of cancer. Very often he does not act in time, which appears to be a rather human characteristic. It was found in a recent survey that physicians apparently did not respond to early symptoms and signs any better than men in other walks of life.

It is necessary, today, in order to properly treat cancer patients to understand the principles and technique of radiation therapy. We have many surgeons who are able to handle the surgical phases of this disease. A young physican from Minnesota who became interested in cancer treatment recently visited a specialist in this field. He was advised to spend all of his time in the radiation department, because he could get surgical assistance whenever needed. The tendency to use radium or radiation therapy indiscriminately and without proper understanding of its indications and contra-indications is fortunately on the wane.

Should the cancer patient be told what he has? Physicians who see many cancer patients have found that if the patient asks the question and appears to really want to know, he should be told. Interviews with such patients, a short time later, usually reveal that they are pursuing the even tenor of their ways very much like patients with other diseases. If the cancer patient is not told, one of the relatives or a friend may consult a physician at a later date because of the fear of cancer. It is often difficult to convince such people that the disease is not present, if they know that the patient with this disease was not told the truth. In a recent conversation with a layman, I was informed that he considered the present-date tendency of the medical profession to share with the patient a knowledge of his disease as most praiseworthy and a distinct scientific advance: This gentleman was suffering with coronary disease, and had been fully informed as to its nature and why he should do certain things.

The average medical student today has an opportunity to see cancer patients in practically every medical school in this country. Our own State University is fortunate in this respect, because of the presence of the Cancer Institute in the University of Minnesota Hospitals group. In the new type of instruction, in which clinical teaching is introduced in the freshman and sophomore years, every effort is made to show the beginning students examples of all the great problems of medicine. Cancer comes in for a good share of attention.

Cancer is curable in many instances if properly treated in the favorable stages. The temporary relief in many forms is as distinct an addition to our therapy as the use of insulin in diabetes. Ways and means are being constantly devised to help patients with painful, advanced malignancy without the use of sedatives. There is a growing interest in the prevention of some forms of cancer through the treatment of precancerous lesions. It behooves every physician in practice to develop an interest in the major phases of cancer diagnosis and treatment, even though only a few patients with disease may be seen each year. The JOURNAL-LANCET is to be congratulated for this forward step in devoting an entire issue to the subject of cancer.

Cancer of the Uterus*

Howard C. Taylor, Jr., M.D.
New York City

CANCER of the uterus is a frequent subject of medical articles, but not without full justification. It is the commonest form of malignant disease in women and accounts, it is said, for the death of one woman out of twenty-seven or 3.7 per cent of all who reach the age of forty. Many authorities feel, furthermore, that the means for preventing these deaths are already in our hands and that the successful control of uterine cancer depends only upon the education of the laity and the proper organization of medical diagnosis and treatment. Whether or not this belief is entirely true, it affords a special excuse for the reiteration of what is known about this disease.

The use of the term cancer of the uterus should perhaps be abandoned, because it includes two entirely distinct conditions, carcinoma of the cervix and carcinoma of the body of the uterus. These two diseases differ completely in their frequency, their histological structure, the age at which they develop, their symptomatology, their prognosis, and in most instances in their treatment. Carcinoma of the cervix occurs from five to ten times more often than carcinoma of the body of the uterus and being, therefore, the more important of the two, will be dealt with principally in this article. The last few years have witnessed many changes in the knowledge of the pathology and treatment of these two new-growths and it is especially with these developments that the present article will concern itself.

Pathology

Cancer of the cervix was formerly divided into two forms, an everting and an inverting type, the former beginning as a small papillary growth and developing into a cauliflower-like tumor, the latter starting as an indurated nodule and infiltrating the substance of the cervix. Both eventually ulcerate and lead to the typical, large, crater-like lesions at the top of the vagina, at which stage there is no way of telling from which form the growth originated. Extension of the cancer beyond the cervix takes place chiefly through the lymphatics into the parametrium and later into the iliac chain of lymph nodes. The great majority of these growths arise from the squamous epithelium of the cervix, but about five per cent are adenocarcinomas.

Efforts in recent years have been concentrated upon the finding of a pre-cancerous lesion. The constant irritation of the epithelium by an inflammatory process, as found in cervicitis and erosion, has been particularly emphasized (Bailey). The extremely superficial character of early carcinoma has been stressed by Hinselmann, who has described the origin of cervical carcinoma in leukoplakia of the squamous epithelium. Schiller also has shown that the earliest growth of cervical carcinoma is on the surface.

Besides these studies of histogenesis, attention has been directed toward the grading of cervical cancer according to the apparent degree of malignancy. The basic principle here involved is the conception that the more the structure of a tumor differs from that of the normal tissue from which it is derived, the more malignant it is liable to be. This theory appears to have originated at least 40 years ago with the work of the German, Hansemann, but practical application of the principle began in this country with the studies of Broders for several types of cancer, and for carcinoma of the cervix with the report of Martzloff. The latter study, which was made on cases treated by surgery, showed that the spinal cell type of cancer, corresponding in general to forms with the most differentiated structure, gave the best prognosis, while the so-called spindle cell type, the least differentiated, proved to be the most malignant. A later study by Healy and Cutler based on cases treated with radium indicated that the undifferentiated or anaplastic type was the most susceptible to radiation and gave the highest percentage of cures, while the variety with relatively adult cell structure was, like normal tissue, more resistant to radiation and gave poorer results. The definite conclusions of these first studies attracted wide attention, but they have not been corroborated fully by other workers. So many contradictions have indeed appeared, articles from some clinics showing the best results with Grade III and from others with Grade II or I, that one must conclude that the histologic grade of carcinoma is of only secondary importance in prognosis.

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The histology of carcinoma of the body of the uterus is quite different, for this tumor is almost always an adenocarcinoma. The pre-cancerous lesion of this condition has been little studied, although there is some evidence that endometrial polyps may at times develop into carcinoma (Stacy). That the glandular hyperplasia, so frequently the cause of bleeding at the menopause, is a pre-cancerous lesion appears unlikely.

The grading of pathological sections from endometrial carcinoma has also been undertaken, and here a definite relation to prognosis appears to be better established (Healy and Cutler). The so-called adenoma malignum, in which the glands retain much of the appearance of the normal endometrium, yields a high percentage of cure, whereas the anaplastic type in which the cells grow diffusely is rarely successfully treated.

Diagnosis

For the early diagnosis of cervical cancer, two methods have recently received considerable attention, namely the use of the colposcope and the staining of the cervix with iodine. The colposcope, invented by Hinselmann, is a binocular magnifier of long focus with a powerful illuminating attachment for examining the mucosa of the cervical lips. With this instrument, fine details are readily observed such as thickening or loss of transparency of the epithelium, and suspicious areas may be indicated from which tissue can be taken for microscopic examination. The originator and some of his disciples believe that cervical cancer could be largely eliminated if all women beyond a certain age would submit themselves to this examination twice yearly.

The test of Schiller depends upon the fact that the upper layers of the vaginal and cervical epithelium normally contain great quantities of glycogen, and, therefore, stain a deep brown with iodine. The technique of the test consists in pouring several cubic centimeters of Lugol's solution into the vagina and after half a minute examining for unstained areas. Lack of staining reaction occurs in the earliest cancers, but also in areas where cornification of the epithelium has taken place, in simple erosions where connective tissue is uncovered by epithelium, and in erosions in the first stage of healing where only cuboidal epithelium is present. Suspicious unstained areas must, therefore, be examined under a microscope to distinguish between an early cancer and the other lesions which also do not stain with iodine. Since all of these conditions are superficial, Schiller advises that a biopsy be obtained by scraping the surface of the cervix with a sharp curet rather than by making a single deeper section by a knife or biopsy forceps.

These two methods if universally applied in routine examinations would certainly result in a reduction in the incidence of and death-rate from cervical cancer. The same might, however, be said of any system which would require the frequently repeated, careful examination of all women beyond the age of thirty.

The early diagnosis of cancer of the body of the uterus rests principally upon the conscientious investigation of all cases of vaginal bleeding after the menopause. In an investigation of 300 cases of women with this symptom, I have found that the bleeding was caused by malignant lesions of the vagina, uterus, and ovaries in 60 per cent. When preliminary bimanual examination disclosed only a symmetrically enlarged uterus, carcinoma of the corpus was eventually found in 83 per cent of the cases, whereas with the uterus normal to palpation, 31 per cent were found to be bleeding from malignancy of the endometrium. It is, therefore, clear that the risk is always too great to omit curettage in a case of post-menopausal bleeding.

Treatment

Prophylaxis—The control of carcinoma of the cervix may be regarded as beginning with the elimination of conditions producing chronic irritation and infection. Under this head may be placed careful obstetrics with the avoidance of all unnecessary cervical lacerations and perhaps prophylaxis, both medical and social, against venereal infection.

The next stage is found in the treatment of existing lacerations, erosions, and infections of the cervix. Various series of figures have been published to show that the incidence of cervical cancer is very low after the amputation or cauterization of the cervix (Bossi, Spirito, Pemberton and Smith). The incidence of cervical cancer would undoubtedly be greatly decreased if women and their physicians could be convinced that all leucorrheas are important and that all lesions of the cervix should be treated until they cease to be a source of irritation.

The repeated gynecologic routine examination of all women over 35 years of age has been advocated by some enthusiasts in cancer prevention, but this country appears at present neither socially nor psychologically ready for such a program.

Surgical Treatment of Carcinoma of the Cervix—The development of Wertheim's radical hys-

terectomy for carcinoma of the cervix was one of the great gynecological achievements of the early part of the century. In Germany and Austria, where the operation is combined with pre- or post-operative radium and x-ray treatment, it has continued in favor, and five year cures ranging up to about 30 per cent have been reported (Philipp).

In this country following the advent of radiation the surgical treatment of cancer of the cervix has fallen more or less into disuse. The radical hysterectomy is difficult to perform and has a high mortality, particularly in the hands of those who have the opportunity to practice it but seldom. A simple complete hysterectomy, which is relatively safe, is an inadequate operation, and gives results far inferior to those produced by radium.

Radium In the Treatment of Carcinoma of the Cervix—In America, in France, in Scandinavia, and many other countries the use of radium has gradually displaced surgery in the treatment of cancer of the cervix. The reason for the change is found in the vastly diminished mortality, in the reduced discomfort for the patient, and in the promise of further progress in radium therapy in contrast to the stationary position of surgery in this field.

Lacassagne has reported five year cures in 35 per cent of cases of cervical cancer following the use of radium and x-ray. This result is, however, much higher than the average, the statistics of most institutions indicating that a general cure of about one-fifth of all cases is to be expected.

Various techniques of radium application are recommended:

A. The single massive dose in which 100 to 200 milligrams of radium are inserted into the canal of the uterus and cervix and into the vaginal fornices for from 24 to 48 hours.

B. The protracted dose method popularized by the Curie Institute of Paris in which a dose of 50 to 60 milligrams or millicuries is applied for from five to six days.

C. The divided dose method advocated by the Radiumhemmet of Stockholm in which a dose of 2,500 milligram hours of radium is followed by a second of the same amount after a four to six weeks' interval.

The actual application of radium is a simple and safe procedure, but experience in dosage and technique is required. Cancer institutes or at least special hospital services appear to be necessary to produce the best results. The occasional application of radium, obtained with instructions as to the manner of its application from commercial houses, can only be condemned.

X-ray Treatment of Carcinoma of the Cervix—Various studies have been undertaken to discover how much radiation is required to destroy a given cancer. This amount is known as the lethal dose and though still a somewhat theoretical concept, it is probably equivalent to from three to ten times the amount required to cause erythema of the skin. Radium, when placed in the cervix, has a very strong local effect, but the intensity of the radiation, diminishing as it does in proportion to the square of the distance from its source, becomes insufficient to kill cancer cells three to four centimeters beyond the cervix itself. In other words a lethal dose cannot be delivered by radium situated in the cervix to metastases present in the regional lymph nodes. Such metastases are present in nearly three-quarters of all of the cases of cervical cancer when they first come for treatment, which explains why only 25 per cent of cures can be obtained by radium and why x-ray is an essential part of treatment.

Now it must be remembered also that for x-rays to reach the iliac nodes which lie near the central part of the body, the radiation must traverse the skin and the intervening organs. To give enough x-ray to kill this central carcinoma through a single field would undoubtedly destroy the skin. For that reason the principle of "cross firing" through multiple ports of entry is employed. In sending a patient for x-ray therapy the physician should be sure that a high voltage machine operating at 200,000 volts is available, that the x-ray tube is placed at a distance of 50 centimeters or more from the body, that at least four fields are utilized, two anterior and two posterior, and that sufficient x-ray is given to cause definite reddening and eventual browning of the skin. Such treatment may be given by a single large treatment to each field or, as is now believed to be preferable, by four or five smaller treatments to each area in a cycle of 16 or more treatments.

Surgical Treatment of Carcinoma of the Body of the Uterus—Hysterectomy has remained the method generally advocated for treating the average case of carcinoma of the uterus, and because this lesion grows slowly and remains localized for a long time in the uterus, it has produced good results with five year cures in perhaps a half of the cases.

Radiation In Carcinoma of the Body of the Uterus—Radium has been widely used as a preoperative measure to prevent implantation of particles of the tumor at the time of the operation. In women of advanced years or with medical complications making the operation a bad risk, radium may often successfully be used alone and surgery omitted. It is possible indeed that radium will claim more and more cases of this group, but its application may be very difficult in large or irregular uterine cavities. The chief function of x-ray in carcinoma of the body of the uterus is as a post-operative measure for implantations which may have occurred outside the field of operation.

In spite of the great improvement in the technique of treatment, the most important factor in prognosis of uterine cancer continues to be the stage of the disease at which therapy is begun. There was far more chance for an early case to have been cured in 1915 than there is for an advanced case in 1935. This being true, the responsibility in an individual case rests primarily with the patient herself in reporting her first symptoms, secondly with the doctor in recognizing the disease at the patient's first visit, and only finally with the surgeon or radiologist in applying the most improved forms of treatment.

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CANCER OF THE BREAST*

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REPORTS from other clinics and our own experience at the cancer clinic at the University of Minnesota indicate that while a relatively higher percentage of benign as compared with malignant lesions are being seen each year, evidence of medical progress has not entirely kept pace with this evidence of progress in lay education. A very distressing percentage of patients has received poor advice or poorly managed treatment from physicians whom they first consulted for breast lesions.

Smith, investigating factors causing delay in therapy of carcinoma, found that 24 per cent of those patients with cancer of the breast who had consulted physicians before coming to operation had received poor advice or had received local operations only. Among patients operated for cancer of the breast at the University Hospital prior to 1929, 13 per cent had received poor advice from their physicians.

While it is not possible to determine all of the factors which contribute to such poor management of breast lesions, it is probable that there is still a number of physicians who do not understand the cancer problem as related to the breast or who have an erroneous idea of the course and curability of such cancers. The reduction of the factor of error on the part of examining physicians is an objective which can easily be achieved and which should have an immediately favorable effect on cancer mortality.

The Importance of Early Diagnosis

The greatest service which a physician can render the patient with a cancer of the breast who consults him is to make the diagnosis and institute treatment at a stage in the development of the cancer when the tumor tissue is entirely confined to the breast, and when the radical amputation which must be done will completely remove all tumor tissue.

Unfortunately, such cases constitute only 30 or 40 per cent of all cases. Between 60 and 70 per cent will have metastasized to the axillary nodes by the time the patient presents herself to the examining physician or by the time she comes to operation. Of this number, there will be some who have had metastases before the primary tumor has become palpable or shows any other sign of malignancy. Lane-Claypon estimates this number at three to 11 per cent of the whole group.

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Such cases have little chance from the start. The balance are theoretically capable of being diagnosed at an early and favorable stage but, for reasons which cannot be entered into here, have never given any physician an opportunity to make such a diagnosis.

While public education will continue to reduce this number, practical difficulties in diagnosis will undoubtedly establish an irreducible minimum. However, we have not even approached that point nor do we know where it will be.

It is of the utmost importance that these 30 or 40 per cent who are at present coming to physicians and who are without metastases to the axillary nodes, shall have a prompt and accurate diagnosis so that their chance of surviving over a five-year period shall not drop from between 75 and 90 per cent down to approximately 15 per cent.

Method of Diagnosis

This diagnosis is not easy. Except for the occasional case, there will be none of the clinical signs of malignancy such as dimpling of the skin, retraction of the nipple, or fixation to the pectoral fascia. These are all late signs and the possessors thereof have already been sentenced to a poor prognosis.

The early and favorable cancers cannot be distinguished from benign lesions by clinical means. Patients with such cancers will be intermingled with a much larger number who have benign lesions, the obvious ones of which will be recognized and not subjected to operation.

Bartlett in 1921 recognized as benign and did not operate upon 46 per cent of his cases; Johnson in 1925 did not operate upon 61 per cent of his cases, and Bloodgood has raised his percentage of unoperated benign lesions from 65 per cent in 1929 to 85 per cent in 1935. Most of the unoperated cases will represent some form of cystic disease such as a diffuse form without discrete nodules, dilated ducts or large blue-domed cysts. While some regard cystic disease as a precursor to carcinoma, we do not so regard it for reasons which I have outlined in an article published previously. Discrete solid tumors, or localized areas of nodularity which are not caused by large blue-domed cysts, cannot be distinguished from early carcinoma or vice versa.

The only way in which the diagnosis can be made is by microscopic examination of the suspected tissue. If physicians will follow the simple rule of immediately operating any single tumor, any suspicious portion of a diffuse process of cystic disease, or even an area of breast tissue in which they only suspect the presence of a mass, the percentage of error and the lost opportunities which are now charged to the medical profession will be almost eradicated.

Diagnostic Aids

Two aids in the diagnosis of breast lesions have been offered. Cutler in 1929 described transillumination of the breast, a diagnostic aid which has been quite generally accepted. With the patient in a dark room and with a cold light held under the breast, cysts which transilluminate can be distinguished from solid tumors, hematomas which cast intensely dark shadows can be recognized, and, in cases of bloody discharge from the nipples, the source of bleeding or the duct containing blood can be localized. The identification of the source of bleeding is of great importance and it is here that transillumination renders its greatest service.

While, in over 50 per cent of cases, benign intraductal papillomas are responsible for the bleeding, a very substantial proportion of such cases will be caused by duct cancer. Even though no palpable tumor is present, it is safer to remove the portion of breast tissue from which the blood is coming and subject it to careful microscopic examination. Only in cases where malignancy has been proven, should the radical operation be done. Multiple sources of bleeding may require simple amputation of the breast in order to rule out cancer.

While transillumination will not distinguish between benign and malignant lesions, it has proved its usefulness and should be familiar to and utilized by all who are called upon to pass on breast lesions.

The use of roentgenograms as an aid in diagnosis of breast lesions was first described by Salomon who, in 1913, published a monograph on local extension of malignant tumors of the mammary gland based on anatomic, pathologic and radiographic findings of breasts removed at operation. In 1929, Goyanes, Gentil, and Guedes published an article on the x-ray diagnosis of breast lesions. Since then a number of articles have appeared in the literature. We have had little experience with the method, believing transillumination a more simple and useful aid to diagnosis.

Although capable of considerable accuracy in diagnosis, as reported by Warren, the x-ray cannot be relied upon in case of negative findings for carcinoma, while positive findings will be of advantage only in eliminating exploratory incision which we do not consider dangerous if properly

performed. Roentgenologic examination would be most useful if it could demonstrate pathology before the tumor is palpable and capable of being detected clinically. The method deserves further trial and no doubt has a place as a diagnostic aid.

Methods of Obtaining Tissue

Four methods of obtaining tissue are:

1. Exploratory incision with incision into the tumor to obtain tissue.
2. Exploratory incision with excision of the tumor mass surrounded by an area of normal tissue.
3. Aspiration biopsy or punch trochar method.
4. Simple amputation of the breast.

The first method is rarely necessary and probably dangerous. Aspiration biopsy as practiced at the Memorial Hospital, while safe, obtains too little tissue and leaves one doubtful whether the correct part of the tumor has been biopsied. Simple amputation in a diffusely involved breast may occasionally be necessary. Greenough reports 23 cases in which simple amputation revealed carcinoma and in which the radical amputation was done immediately. These cases showed 61 per cent five-year cures in comparison with the average of 33 per cent five-year cures of 310 patients who had radical amputations without preliminary operations for diagnosis. While not conclusive, the evidence suggests that this procedure is not as dangerous as some have claimed.

The most satisfactory and commonly used method of obtaining tissue is the exploratory excision of the tumor. If carried out properly and if followed by immediate radical amputation, I am aware of no evidence which indicates that the practice is dangerous. The use of the endotherm knife to seal the ends of cut lymphatic vessels has theoretical advantages. The objection that wound healing may be interfered with can be overcome if the skin incision is made with the ordinary knife and only the breast tissue cut by endothermy.

A delay between exploratory excision and the completed radical amputation has always been considered dangerous. Obviously, a considerable delay is highly inimical to success. Harrington reports his poorest results in this group of secondary operations. Bloodgood recommends a delay in those borderline tumors where the study of quick sections leaves the experienced pathologist in doubt. During this period, the sections are referred to other pathologists and the opinion of the majority prevails. As additional precaution, the field is irradiated while awaiting the majority verdict. He has pointed out that even though malignancy is diagnosed, the regional lymph nodes are never involved because the malignancies are of such low grade. Bloodgood further intimates his belief that a short delay may not be dangerous in any case.

For the present, it is safer to follow the teaching that the radical amputation must follow immediately upon the local removal of a malignant lesion.

Where no competent pathologist is available and where a physician cannot or will not send his patient to a hospital where adequate facilities for immediate section and diagnosis are available, I am convinced that the patient's interest will be better served if the suspicious mass is excised and sent away to a pathologist. With a little forethought and planning, the diagnosis can be had in twenty-four or forty-eight hours and if malignancy is present, the radical amputation can follow immediately.

It is not contemplated that this procedure will be commonly followed. It is suggested because it is my sincere belief that the risk has been overrated and that it is decidedly preferable to observing a lesion until the evidence of malignancy is apparent or unmistakable.

Treatment

The best therapy for carcinoma of the breast which has not progressed into the hopeless stage is the complete radical amputation, following the principles laid down by Halsted and by Willy Meyer. The evidence justifies the use of some form of radiation therapy in conjunction with radical amputation. Pre-operative x-ray therapy, post-operative x-ray therapy, and interstitial radiation used singly and in combination are adjuncts for which claims are made and favorable evidence advanced. The selection of the proper combination is a matter of judgment, for the evidence is frequently contradictory, and competent, well-considered opinion varies.

The beneficial effect of radiation as an adjunct to surgery will be entirely lost if the surgeon contents himself with a less radical operation or a less careful and meticulous dissection of the axilla than has been practiced since the time of Halsted and Willy Meyer. Nor will its use permit of abandoning fundamental principles as: (a) making the tumor the center of the block of tissue which is removed, a principle which Bevan has taught for years; (b) the avoidance of infection which predisposes to bothersome lymphedema, and (c) the removal of an adequate quantity of skin to prevent local skin recurrences, a principle which Lewis and Reinhoff advocate after a review of

breast cancers operated at Johns Hopkins Hospital.

Radiation therapy alone has been tried with some encouraging results. Adair, using interstitial radiation plus x-ray therapy, reports 36.3 per cent five year survivals in 37 cases. Of these, 24.2 per cent were free of any evidence of the disease. These were compared with results obtained by surgery plus x-ray therapy, where 40.6 per cent of 137 cases survived five years, 38 per cent being free of the disease. Keynes, Code, and other English surgeons believe that a combination of interstitial radiation and x-ray therapy is the best treatment and reserve surgery for special indications.

Adair has studied the response of various types of breast cancer to radiation and has found, as have others, that most cancers are radio-resistant. Lee and Pack have found that the more radio-resistant tumors require 1,200 per cent erythema dose for their complete destruction. Obviously, the skin can tolerate no such dose and hence surface radiation can accomplish only inhibition and not sterilization in most breast cancers. The technical difficulty of accurately localizing all deposits of cancer tissue for concentrated dosage, and the limited amount of cancer tissue which can be destroyed by a dose which can be tolerated by the patient, are the handicaps imposed upon the use of interstitial radiation.

Radiation therapy is especially useful in inoperable lesions. Absolute indications of inoperability are: (a) fixation of the tumor to the chest wall; (b) supraclavicular metastases or metastases into the opposite axilla (proved by biopsy); (c) diffuse inflammatory carcinoma involving a large skin area; (d) diffuse skin metastases, and (e) remote metastases. On such cases, we believe that radiation offers more palliation than does surgery. The performance of extensive surgical procedures in these cases only discredits surgery in the eyes of the laity.

Of borderline operability are massive carcinomas with extensive axillary metastases, small inflammatory carcinomas, and those arising during pregnancy or lactation. It has been our practice to give heavy doses of x-ray in such cases and to reserve judgment in operative procedures until the response to radiation has been noted. In some cases, a favorable response has been followed by the implantation of the tumor and axilla with radon (radium emanation), in others by the complete operation.

Despite theoretical arguments against, and the dissenting opinion of such able men as Harrington and Greenough, whose results do not show advantage, the great majority of reports favor the use of post-operative high voltage x-ray therapy. In the limited number of cases operated prior to 1929 at the University Hospital and in which post-operative x-ray therapy was given, the five-year survival rate was 14 per cent better than in a larger group where post-operative therapy was not used. While showing a somewhat greater difference than most reports, this agrees in general with the views and figures as given by Lee, Adair, Schmitz, Pfahler and Widmann, Traut and Peterson, Overholt and Echerson, Hintz, Martindale, Schoute and Orbaan, and many others.

Definitely operable lesions should have the radical amputation followed by post-operative x-ray therapy. Tumors of borderline operability should have preliminary x-ray therapy. Further experience on the part of those who are using pre-operative radiation therapy may induce us all to use it more frequently.

Conclusion

1. The reduction of the factor of error in the diagnosis of early cases is the most logical step toward the improvement of the mortality rate of cancer of the breast. This is the responsibility of the physician.

2. Even though it is not the method of choice, a short delay for the purpose of obtaining a microscopic diagnosis from a reliable pathologist is preferable to an observation period during which time the cancer continues to spread.

3. A properly performed radical amputation of the breast combined with some form of radiotherapy is still the best method of treatment.

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WHAT ARE THE PROSPECTS OF CURE OF CARCINOMA OF THE STOMACH*

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WHAT are the prospects for cure in carcinoma of the stomach and how can these results be improved?

In answer to the first question, it might be stated briefly that when the carcinomatous lesion is confined to the stomach and can be removed by partial gastrectomy, 50 per cent of the patients can be expected to live for three years or longer. This figure is based on the results of Gray, Balfour and Kirklin, who studied the post-operative course of 1,000 patients who were operated on at the Mayo Clinic for carcinoma of the stomach. When the carcinomatous lesion, however, had extended beyond the stomach to the regional lymph glands, the percentage of three-year cures following partial gastrectomy decreased to 20 per cent. The corollary of this is that one must exert every effort to recognize carcinomas of the stomach in their earliest stages so that they can be removed while they are localized, and that if certain lesions of the stomach, which have a tendency to become carcinomatous, are recognized before malignant changes have occurred, even better results may be expected following their removal.

The roentgenographic and fluoroscopic examinations are of the greatest aid to the physician in determining the presence of gastric lesions, even when they are exceedingly small. Since skilled roentgenologists are able to demonstrate the presence of gastric lesions as small as 1 cm. in diameter, and in many such cases are able to designate whether the lesion is benign or malignant, the roentgenologic examination is the outstanding contribution to the early recognition of gastric lesions. Although there is a certain percentage of error in the roentgenographic identification of the type of gastric lesion present, and likewise in the diagnosis, and because at operation, distinction between small benign and small malignant lesions is frequently uncertain until microscopic examination has been made, it is proper to regard all gastric lesions as malignant until they are proved to be otherwise. I believe the statement is justified that the report of a malignant lesion of the stomach, made by a competent roentgenologist, is almost certain to be accurate, but that the report of a gastric ulcer made by a roentgenologist, or even by a surgeon who actually sees and feels the lesion at the time of operation, does not exclude the possibility that the lesion may be carcinomatous. Several years ago McVicar called attention to the fact that an ulcerating lesion of the stomach, which disappeared following a course of medical treatment, could not always be assumed to be benign, for he found that many patients who had ulcerating lesions of the stomach might respond temporarily to medical treatment, even when the process was malignant. To consider such disappearance of a lesion as a criterion that it is benign may cause delay in attacking the lesion surgically, and it may allow an operable lesion to proceed to inoperability.

There is no doubt that medical treatment of many benign gastric ulcers, by internists skilled in treatment of gastro-intestinal disease, is worthy of trial, especially in the presence of certain types of gastric ulcer, particularly when the condition is acute and the patient is young, or when the patient is an elderly individual and constitutes a poor surgical risk. This treatment should be attempted only when the patient can be kept under observation for several months. It should be emphasized that the decision to treat such a person by medical measures carries great responsibility, for, if the lesion is malignant, by the time it has been found to respond unsatisfactorily to medical treatment, sufficient time may have elapsed for it to have become unremovable. I vividly recall one patient who had a gastric ulcer and who was being treated medically. Pain was relieved, blood disappeared from the stools, and the niche disappeared on roentgenologic examination. Ten months later, however, symptoms reappeared. The roentgenogram revealed the lesion, exploration

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was made, and an extensive, inoperable malignant lesion was found, from which the patient died a few months later.

Gastric polyps, like polyps of the colon, are usually malignant. Their presence is usually associated with absence of free hydrochloric acid in the gastric secretion, and frequently they bleed to the extent that a mistaken diagnosis of pernicious anemia has been made and treatment carried out without roentgenologic examination of the stomach having been made. In cases of marked anemia seen at the clinic, even though apparently of the primary type, fluoroscopic and roentgenographic examinations of the stomach are routine procedures, and the number of these cases, in which bleeding gastric polyps have been discovered, has been surprising. When such polyps have been removed, specimens from various portions of them, from the periphery as well as from the stalk, should be carefully examined microscopically. In many seemingly benign gastric polyps which have been removed at the clinic, peripheral secondary cytoplasia has been found. It would appear, therefore, that removal of a carcinomatous ulcer or a carcinomatous polyp indicates the proper attack on some of the earliest carcinomatous lesions of the stomach. On another occasion I have referred to carcinomas, which develop in such lesions, as developmental carcinomas, whereas, the more extensive infiltrating lesions, which have no ulcerative features, might be considered to compose a group of original carcinomas.

The saddest feature of many original carcinomas of the stomach is their symptomless rapidity of growth; they fail to manifest their presence until symptoms of obstruction have occurred, or until extension of the lesion to adjacent structures produces abdominal pain. It is probable that this type of lesion can be recognized early only by frequent, routine, fluoroscopic and roentgenographic examinations of the stomach, and I should like to suggest that all patients, who are more than 40 years of age, should, at the time of their periodic health examinations, be subjected to fluoroscopic examination of the stomach and roentgenographic examination of the colon, particularly if the patients complain of persistent dyspeptic discomfort.

It is worth while remembering that malignant lesions occur much more frequently in the stomach than in any other part of the gastro-intestinal tract, and that they occur in the stomach three times as often among men as they do among women. Although statistics and experimental studies of carcinoma might lead to the assumption that it is not hereditary, I think all physicians have been impressed by the frequency with which patients who do have carcinoma have known of other members of their families who also have had malignant lesions. It would appear, therefore, that people who have such hereditary tendencies should be subjected to the most painstaking search for malignant lesions at the time of their periodic health examinations. Fortunately, most patients who have carcinoma of the stomach do have symptoms which should lead the physician to suspect the possibility of the presence of abnormal gastric function.

It is particularly interesting and noteworthy that a great many patients who are found, on roentgenologic examination, to have carcinoma of the stomach, have been treated medically for many months on the basis of a clinical diagnosis of peptic ulcer, because of similarity of symptoms of the two conditions, and, in most such cases, the medical treatment has been instituted and carried out without fluoroscopic or roentgenographic examination of the stomach. The corollary of this is obvious, namely, that a patient who has symptoms in some cases of dyspepsia, no matter how closely they resemble the clinical syndrome of benign peptic ulcer, should not be treated medically without fluoroscopic examination to confirm the diagnosis, and even then, if the lesion is reported to be a gastric ulcer, the possibility, indeed the probability, of its being malignant should lead to immediate surgical consultation.

Gastric Lesions of "Doubtful Operability"

The second method of increasing the number of patients who have clinical cures of carcinoma of the stomach following gastric resection is to increase the operability, in other words, to be able to remove a greater number of gastric carcinomas. In general, I believe that during the past two or three years an increasing number of extensive malignant lesions of the stomach have been removed at the clinic. One reason for this has seemed to be the fact that, regardless of the extent of the malignant lesion of the stomach on fluoroscopic examination, if the patient's general condition permits, he is given the benefit of surgical exploration of the lesion, providing distant metastasis is not demonstrable. In a group of 170 patients operated on at the clinic in 1933 for carcinoma of the stomach the lesions of 69 patients were removed by partial or total gastrectomy. In 37 of these cases, the carcinoma by fluoroscopic and roentgenographic examination, appeared to be very extensive, and such examinations seemed to indicate that the lesion was of doubtful operability, or wholly inoperable. Yet, in 50 per cent of these

37 cases, the lesion was removed successfully.[6] I would estimate that in 10 to 15 per cent of those cases in which the lesion roentgenologically would appear to be inoperable because of its extent, surgical removal of the lesion can be accomplished.

In a recent study[3] of a group of 184 cases in which operation was performed at the clinic, and in which the extent of the lesion required the removal of three-fourths or more of the stomach, that is, so-called subtotal gastrectomy, and in which the preoperative roentgenographic examination revealed that many of the lesions were inoperable or of doubtful operability because of their extent, 18 per cent of the patients were living at the end of five years. Half of this 18 per cent had involvement of the adjacent lymph nodes in the gastrocolic and gastrohepatic omentum at the time of the subtotal gastrectomy. Moreover, this report of 18 per cent of five-year cures in cases in which apparently inoperable lesions were removed by subtotal gastrectomy does not take into account the larger percentage of cases in which the patients have lived for variable periods up to five years, and in which palliative relief from the troublesome symptoms of obstruction, ulceration and anemia had been accomplished. Large malignant lesions of the stomach will often be found to be of low grade malignancy, to be sharply demarcated, and to present no involvement of lymph nodes. Removal of such lesions by partial gastrectomy gives a high incidence of permanent cure and this is particularly true in cases in which the patients are elderly.[7 8] In 1934, in 231 cases in which operation for carcinoma of the stomach was performed at the clinic, the lesion was removed by partial, subtotal or total gastrectomy in 101 cases. The finding of an extensive carcinoma, localized in the stomach, or even one associated with involvement of lymph nodes, is viewed from the standpoint that unless the lesion is removed the patient is doomed to early death.

In several cases total gastrectomy[4 5 8] has been performed successfully at the clinic, and the patients have lived and been comfortable two and three years subsequently. That such an operative procedure can be carried out in suitable cases with great benefit to the patient has led to the impression that all gastric lesions should be removed unless they have invaded adjacent structures to the extent that the carcinomatous process cannot be remove in its entirety. At operation, in many instances in which the lesion at first would appear not to be susceptible of removal because of its extent and attachment to the mesocolon and to the capsule of the pancreas or liver, it is found that, after freeing of adhesions and separating the lesion from these structures, the growth is readily removable. In other cases, particularly if the tumor is large, the uninvolved portion of the stomach may be thickened and appear to be involved by the carcinoma, yet the thickening may be only the result of gastritis adjacent to the lesion. It is not an uncommon experience to find that a growth which is examined while the patient is straining under light anesthesia appears to be unremovable, but under deep anesthesia it may be seen to be removable readily. In several cases involvement of the transverse mesocolon has given, at first, the appearance of inoperability, yet it usually is the avascular portion of the mesocolon that is involved, and this portion can be removed with the carcinoma, without interfering with the blood supply of the colon.

The Influence of Age On Operative Risk

I believe it is worth while emphasizing to patients who are in the sixth, seventh or even eighth decades of life that they frequently stand operative procedures of great magnitude as well as do younger individuals. In one of the two cases in which I have successfully performed total gastrectomy for carcinoma, the patient was a man 69 years of age, and he was living and well two years later. Two years ago I performed subtotal gastrectomy on a patient who was eighty years of age and he has been free of recurrence since that time. I have recently performed operations on the stomach in cases in which the patients were 84, 79 and 74 years of age. I recall many cases in which patients in the sixth and seventh decades of life were operated on successfully, and in which extensive gastric resections were carried out successfully with a risk no greater than that attending resections of average extent among much younger patients. A corollary of this is that it is not the age of the patient, but his general condition that is a factor in the surgical mortality.

Summary

Statistics show that the prospect for cure of carcinoma of the stomach by partial gastrectomy in cases in which the lesion is localized to the stomach is approximately 50 per cent for three-year cures. In a group of 184 cases in which an extensive carcinoma of the stomach was removed surgically at the clinic, 18 per cent of the patients were apparently well at the end of five years or more after the operation. In these cases it was necessary to remove three-fourths or more of the stomach. In some of the cases, roentgenographic examination indicated that the lesions were inoperable, while in other cases it revealed that the

lesions were of "doubtful operability." Progress is to be made in further improving the result by the removal of gastric lesions prone to develop into carcinoma. These are gastric polyps and certain of the chronic gastric ulcers. The early recognition of so-called original carcinomas of the stomach can be obtained by employing fluoroscopic and roentgenographic examinations of the stomach as an essential part of every physical examination of patients who are more than 40 years of age, and who complain of dyspepsia. This should be particularly the case of patients who come from families in which carcinoma has been present.

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SOME OBSERVATIONS CONCERNING CANCER OF THE RECTUM*

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NO SYMPOSIUM on cancer would be complete without some reference to cancer of the rectum, since 60 per cent of cancers of the large bowel, and four per cent of all cancers occur in the rectum or rectosigmoid. I do not intend, however, to rehash the entire text book descriptions of rectal cancer. Rather, I would like to call attention to a few points which have not been particularly stressed. Until recent years proctoscopic examination was regarded as a hospital procedure, and as a result such an examination was usually done only when symptoms were severe, or had persisted for a long period of time. Under these conditions when such an examination was made an advanced lesion was almost always discovered. This being true little was really known about the development of rectal cancer in its earlier stages and our beautiful and classic descriptions of this condition were all of advanced or inoperable lesions. Proctoscopic examination is now recognized as a rapid and simple office procedure to be employed in every case where the slightest rectal symptoms are present, or as a part of a complete routine physical examination. From this we have learned that the most insignificant rectal disturbance may indicate the onset of some serious condition, or that such a condition may even be present without any symptoms sufficient to be noticed. The net result has been the discovery of many benign and precancerous lesions as well as many early carcinomas. From the study of these we have been able to learn a great deal about the formation and early progress of rectal cancer. As a result we have quite radically changed our ideas concerning prognosis and treatment.

In general, cancer of the rectum seems to develop as three distinct types. The first is a flat button-like lesion which is the more malignant variety. In some cases there may be a precancerous stage, although I have seen two such lesions one-third centimeter in breadth, which were definitely adenocarcinomas, and I have never seen such a lesion more than one centimeter in width which was not malignant. This type of lesion is one which is usually symptomless in its early stages. Bleeding or mucus discharge does not occur until necrosis has taken place—usually in the center of the tumor. This seldom occurs before the tumor is one and one-half to two centimeters in diameter, and by this time the tumor is usually adherred to the muscular coats of the bowel and invasion has begun. Metastases are often present even this early. I distinctly recall one tumor one centimeter in diameter with a metastatic lymph node two centimeters in diameter an inch away from the bowel wall.

The second type of lesion is the pedunculated lesion. These are often not malignant in their earliest inception, but remain as benign adenomas for varying periods of time before malignant changes occur. In fact some of them degenerate into benign fibrous polyps. Some may grow in size to that of a small orange and still be benign. This type of tumor invariably gives warning of its presence by bleeding. Hence their discovery as a precancerous lesion, or at least in the early stages of malignancy, should be made in every case. Only the patient's or physician's disregard for the passage of blood prevents their discovery. Since there is apparently a difference in the degree of malignancy in pedunculated and non-pedunculated lesions, it is of some importance that this fact be determined. The mucous membrane of the rectum is quite mobile and a flat lesion may be

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situated on a fold of mucosa and thus give an impression of pedunculation where a pedicle does not actually exist. This same confusion may occur where a flat lesion is situated on one of Houston's valves. A true pedicle can be felt as a distinct stalk-like structure, and must be differentiated from an area of relaxed or slightly attenuated mucosa.

The third type of lesion is the so-called papillary carcinoma. This tumor appears as a small excrescence on the rectal mucosa and apparently spreads by contact. Small tumors spring up at different points on the rectal mucosa adjacent to the parent tumor in the manner of the condyloma acuminata. In fact their appearance much resembles these, except that the covering epithelium is columnar mucus secreting, rather than squamous. These tumors do not metastasize and local removal eradicates them. Their greatest importance lies in confusing them with the more malignant varieties.

The rate of local extension of rectal cancer varies. There have been a number of cases which have been seen early, and where for some reason operation was not done, that observations have been made from time to time as to the progress of the disease. From this observation it would seem that from the time that invasion of the muscular coat of the rectum occurs, twelve to eighteen months will elapse before the growth completely encircles the rectum. With a pedunculated lesion the actual time involved might well be made much longer since the tumor may be malignant for some time before its pedicle is invaded and the muscular wall penetrated.

In general I believe that rectal carcinoma has usually been considered to be a rather benign type of carcinoma which metastasized late. I am sure this is not correct, and metastases occur with rectal cancer about the same as elsewhere. It is true that occasionally a large rectal tumor may exist without metastases. This is also true of cancer elsewhere. Furthermore rectal carcinomas, due to infection, are frequently surrounded by a large amount of inflammatory tissue which without microscopic examination or at least section of the mass, might well be thought to be a part of the cancerous process. In other words the actual amount of cancer tissue present in a rectal mass is likely to be much less than in a mass of corresponding size elsewhere—as for instance the breast. It is my conviction from the observation of early rectal carcinomas that in the more malignant type, metastases frequently occur early.

The treatment of well developed rectal cancer is well standardized and does not require much discussion. Barring physical impairments or too advanced age radical surgery should always be advised. The abdomen should always be explored and upon these findings and the extent of local rectal involvement should depend the type of operation procedure. The minimum should be a colostomy followed by posterior resection of the rectum. The application of this method should be limited, and in the majority of cases a one- or two-stage abdominoperineal removal should be done. It is by these latter procedures that a much larger portion of the gland-bearing area can be removed.

In the earlier cases a routine method of treatment has not been so definitely determined. There are surely some cases where local removal or destruction of the tumor should be advised rather than the more serious and mutilating type of operation invariably necessary in the more advanced cases. Whether or not a small carcinoma should be treated locally depends principally upon two factors: First, whether or not the muscular wall of the rectum has been invaded by the cancer tissue, and second, the grade of malignancy of the tumor. Flat tumors usually become fixed and invade the muscle tissue early, and as a rule are more malignant. Hence extreme caution should be used in advising purely local measures. Pedunculated lesions usually do not invade so rapidly. They remain benign longer, and after malignant changes have occurred it may be some time before the pedicle becomes infiltrated with cancerous tissue and invasion of the muscle wall occurs. In either type of lesion if the muscle is invaded and the grade of malignancy higher than one, local removal or destruction is too risky to take a chance, except in cases of advanced age or with other physical impairments.

In conclusion then it can be said that the idea of rectal cancer being an especially benign type of cancer is erroneous. Secondly, that with earlier discovery of rectal cancer, we have a problem of treatment different from that of the more advanced lesion with which we have long been thoroughly familiar. Thirdly, that the final word has not been said as to the treatment of early rectal cancers, but present experience has definitely determined that local measures are justifiable in some of these cases.

THE PRESENT TREND OF RADIATION IN THE TREATMENT OF CANCER*

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AS I SEE the problem of radiation in its present state we are confronted with two major difficulties which thus far have resisted solution in spite of all our developments and refinements in the technique of x-rays and radium: (1) a high proportion of malignant tumors are sufficiently resistant to radiation to defy the highest voltages of x-rays, the largest quantities of radium and the most modern technique of treatment. (2) When the primary lesion is completely eradicated and locally cured, the patient often succumbs because of distant metastases which remain uncontrollable by any known method of radiation.

It is impossible to foresee any real advance in the radiotherapy of cancer until one or both of these difficulties have been overcome. All efforts to diminish or overcome radioresistance of tumor cells have thus far failed, with the single exception of the use of the "Time Factor" as discovered by Regaud and his collaborators and clinically demonstrated by Coutard of the Curie Institute of Paris.

As we look back over the last fifteen years it is quite evident that the contributions of the French School culminating in the Coutard method constitute the most fundamental advance in the radiotherapy of malignant disease. The basic principle of the Coutard method is a slow, continuous, highly filtered radiation with a low milliamperage and a large total dose. The use of this method, as is now well known, has yielded a certain percentage of five-year cures of cancer of the tonsil, pharynx and larynx that had not previously been accomplished by any other method of radiotherapy.

Since the Coutard method has been introduced and extensively popularized, various modifications have been suggested and practiced; in fact, many methods that are designated as the Coutard method have been altered in so many respects that they have become quite unrecognizable. Perhaps the most important modification of the Coutard method that has been attempted is the use of 25 to 30 milliamperes instead of 4 milliamperes. This modification has an important economic aspect, as the daily time of treatment is ten to fifteen minutes in one circumstance and forty to fifty minutes in the other.

At the present time there is a difference of opinion upon the absolute necessity of using as low as 4 milliamperes of current. Some careful observers who have used 25 to 30 milliamperes for the last three years are changing back to the use of 4 milliamperes. Coutard himself is of the opinion that the slow rate of radiation is superior, and has not altered his view upon this subject. Coutard is of the opinion that the use of more highly penetrating x-rays or the use of gamma rays of radium in very large quantities should improve our present methods and results.

There is one factor in technique that Coutard has altered recently—namely, the total period of irradiation. He has diminished the daily dose and protracted the total period of treatment from the former 25 days to 30, 40, 50 and 60 days.

One of the interesting and perhaps important problems in technique that confronts us today is the question of what the optimum total time of irradiation actually is. Regaud has been of the opinion that in most instances three weeks is the upper limit of safety for the avoidance of a local radioimmunity and there is considerable experimental, pathological and clinical evidence to support the view. However, there is some clinical evidence to indicate that in the more resistant adult forms of epidermoid carcinoma a protraction of the total interval may result in more pronounced destructive effects of the tumor cells. Should this thesis be substantiated, the technique of radiotherapy will be greatly simplified. Thus, if it can be established that the treatment of a malignant tumor can be administered over a period of 40 to 50 days without the production of radioimmunity, the intense local and general reactions will be avoided. Under these circumstances the same total dose of radiation, 3,500 r to 4,000 r can be administered to each side of the neck over a protracted period of 40 days to 50 days without the production of a "radioepidermite" and with the production of only a mild "radioepithelite." This is the present tendency of Coutard and Baclesse of the Curie Institute.

During the last two years I have attempted to determine the upper limit of safety in the total time interval of radiation. A group of patients have been treated with the four gram radium pack twice daily and consecutively without interruption for periods varying between 30 and 90 days. In a number of cases complete sterilization of the primary lesion has been affected, in spite of the fact that the total duration has exceeded 30 days. The lesions thus treated have been adult fully differentiated squamous carcinomas of the tonsil, pharynx and larynx in several instances accompanied by regional metastases. The evidence

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obtained from these observations suggests the possibility that the total interval of treatment may be protracted under certain circumstances without necessarily inducing a state of radio-immunity. I know of no conclusive evidence to indicate the optimum total period of radiation.

Teleradium Therapy

Until the price of radium is reduced far below its present cost the use of radium packs or radium bombs is practically prohibitive, and their utilization must be restricted to endowed institutions. There has been some evidence to suggest that no actual differences in quality exist between x-rays and gamma rays, and that supposed differences between the two rays can be accounted for by the time factor and other variables in the technique of the two methods. Other investigators, notably Forsell, Berven and Regaud believe that adequate quantities of radium (four to eight grams) utilized at longer distances exert a more specific effect upon cancer and yield correspondingly better results. Interesting studies along these lines are now pursued in various American and European centers. The largest quantity of radium employed in one apparatus consisting of eight grams has been installed in the Curie Institute of Paris. After several months it was apparent that the apparatus was not adequately protected. A new container with greater protection has been completed and the use of the eight-gram radium bomb has been resumed. Other European centers with smaller radium bombs are the University of Louvain—five grams; Radiumhemmet, Stockholm—five grams, and the National Radium Commission of England —five grams.

In America, the Memorial Hospital, New York; Burnam & Kelly, Baltimore; Buffalo State Institute for Malignant Disease; Bellevue Hospital, New York; The Michael Reese Hospital, Chicago, and the Edward Hines Veterans Hospital, Hines, Ill., are studying the efficacy of teleradium therapy.

The preservation of the general state of the patient and maintenance of the integrity of the tumor bed in response to tremendous doses of radium have been demonstrated. A decision upon whether teleradium therapy exerts a more pronounced effect upon cancer than high voltage x-rays used under similar conditions and with the same doses must await further study.

Higher Voltage X-rays

There is a tendency at the present time to increase the voltage of x-rays. The use of very high voltages is too recent to permit a discussion of its true value. There seems to be little doubt that some increase in voltage over the present 200 kv will improve the results in certain cases, but it is impossible to state at this time what the optimum voltage will ultimately prove to be. Some investigators are of the opinion that 400 kv should not be exceeded whereas others are of the opinion that 800 to 1,000 will prove to be of greater benefit. Investigations along these lines are proceeding at different centers, but it is much too early to pass any opinion upon them.

CANCER OF THE UPPER RESPIRATORY TRACT*

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The Problem

CANCER in the upper respiratory tract possesses the possibilities of as early diagnosis as malignant growths on the external surface of the body. This implies two requisites, first, that the public be adequately educated to the possible significance of early symptoms and second, that the physician assume his responsibilities to apply the knowledge available to him in his undergraduate training.

A perusal of case records of these malignancies leaves the impression that a large percentage of those afflicted have, for example, teeth pulled to relieve the symptom of pain in a carcinoma of an antrum, local application of antiseptics to the pharynx for suspected inflammation when malignant disease could be detected if a careful search was made, or tonsillectomy or throat sprays to cure the hoarseness caused by a developing cancer of the larynx.

General Considerations

A malignancy of the upper respiratory tract is not considered to be a common disease, but in any center where tumor cases are sent for care, these malignancies seem rather frequent. They probably account for five to ten per cent of all forms of cancer. A wide variety of malignant tumors may involve this area. The most common type is the squamous cell carcinoma which may originate in the nasal space and sinuses, the nasopharynx, tonsil, pharynx and larynx. The degree of malignancy in general tends to be greater in the lymphoepithelial structures of the nasopharynx and tonsil. Certain anatomical and

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physiological characteristics of the several areas of the upper respiratory tract would obviously determine to some extent the manifestations of the malignant growth, the type of treatment necessary and the prognosis.

Manifestations

NASAL SPACE AND SINUSES

Early	Late
Nasal obstruction, catarrh, a sense of discomfort localized to a sinus area, (particularly when unilateral in an individual above forty).	Pain (may be present in a relatively early stage). Swelling. Hemorrhage.

NASOPHARYNX

Early	Late
Nasal obstruction, postnasal discharge, (mucoid, purulent or blood tinged). "Fullness" in an ear usually accompanied by an increasing discomfort developing into pain and gradual hearing loss.	Pain—any branches of the 5th nerve—"Jugular foramen syndrome" (paralysis of the 9th, 10th, 11th, 12th, cranial nerves). Trismus. Evidence of invasion of orbit. Metastatic glands to neck.

TONSILS AND PHARYNX

Early	Late
"A sore spot," a sense of "fullness," (usually aggravated by swallowing) an increase in the amount of "phlegm" or mucous in the throat. "Inability to clear the throat."	An increase in these early symptoms to a marked dysphagia. Pain (often referred to an ear). Bloodtinged sputum. External cervical swelling.

LARYNX

Early	Late
Any change in voice ranging from the early muffled voice (an inability to clear the voice) to a distinct hoarseness.	Pronounced hoarseness. Stridor (depending on obstruction to air-way). In the presence of hoarseness, pain referred to an ear is a sign of an advanced stage of laryngeal cancer.

Method of Detection of the Signs of Malignant Change in Upper Respiratory Tract Tissue

The appearance of early malignant change in the tissue of the upper respiratory tract is no special problem of diagnosis if the suspected area is subjected to a careful scrutiny. The only problem is that of an adequate view of the area involved. In the nasal space this means an inspection of the nasal fossae with good illumination reflected from a head mirror through the ordinary nasal speculum. The x-ray study is the proper means to detect suspected malignant change within the antra, sphenoids or frontal sinuses and when doubtful, exploration for a direct view is necessary.

In the posterior nasal space and the nasopharynx, the simple mirror (rhinoscopic) with reflected light from a head mirror offers the means of viewing the choanae, the vault of the nasopharynx and Rosenmüller's fossa. To supplement this study, the nasopharyngoscope (which is similar in principle to the cystoscope) can be used for localized study of a particular spot when an adequate view by the first mentioned method is not obtained.

In the lower pharynx, at the base of the tongue, for the piriform sinuses and the larynx, the mirror will reveal the site clearly in almost all instances. Occasionally, the direct laryngoscope is necessary.

The specific alteration in tissue which should incite the examiner's interest to determine malignant change should be well known to every practicing physician. The most common alteration is one of swelling or hypertrophy. The next sign is that of trophic change, an alteration in the viability or health of surface tissue ranging from a deepening in normal color to pallor or actual surface necrosis going on to ulceration.

Glands in the neck of doubtful etiology demand that the tonsil area, base of the tongue, pharynx and nasopharynx be studied for the source of metastases.

Biopsy offers the conclusive step to a certain diagnosis and in general is a safe procedure. Whenever possible, however, it should be the plan to have the surgeon who is to carry out the treatment make the biopsy. Especially is this true in cases of laryngeal tumors where much trauma may produce local changes in the appearance of the vocal cords to mask for several days the actual extent of the growth.

Present Standards of Treatment

Modern methods of treatment of cancer in the upper respiratory tract entail two considerations, one, the matter of cure, the other, palliation. The mortality from treatment in these areas has been reduced in experienced hands to less than five per cent even in the more formidable procedures such as laryngectomy. The modern use of electro-surgical methods has done much to improve end results.

In the nasal space and sinuses, pure surgery alone has little place in the treatment of malignancies. Surgical diathermy for exposure, an adequate cauterization supplemented by the proper selection of x-ray and radium usually in combination forms the basis of treatment.

In the nasopharynx, tonsils and pharynx surgical removal is no longer considered. For the low grade malignancies cauterization for destruction is an effective form of treatment. For the more malignant growths x-ray therapy and

radiation have gained a deserved prominence as the methods of application have improved.

Radium and x-ray are of secondary importance in the cure of cancer of the larynx. When the growth is limited to a vocal cord, surgical removal of the diseased area with a surrounding margin of healthy tissue offers a good possibility of cure in a high percentage of cases properly selected for this type of treatment. A useful voice is preserved. The margins of the operative site may be subjected to cauterization as an additional precaution. When total removal of the larynx is necessary, an instrument must be used for voice production except in a small percentage of cases where an ability to phonate with the pharyngeal muscles is acquired. X-ray therapy is used supplementary to surgical removal of a larynx but the use of x-ray and radium alone through the cartilaginous framework of the larynx has not given satisfactory results.

Results of Treatment

Every center where cancer is treated has its five year cures of malignancies of the upper respiratory tract. With the ideal of early diagnosis attained, the percentage of cures will approach the ideal. When one considers that in many instances of those treated the age of the patient has reached the normal expectancy or beyond, the matter of the records of five year cures seems even more remarkable. In the large series of cases, New has reported 82 per cent five year cures in the cases of thyrotomy for cancer of the larynx and 56 per cent five year cures in laryngectomy. Öhngren and Holmgren in Sweden have attained 38.5 per cent five year cures in primary cancer of the antrum. Berven (Sweden) has distinctly raised the percentage of these cures in cancer of the tonsil and pharynx submitted to improved methods of x-ray and radiation.

EXPERIENCE WITH RADIUM

Charles Frank Morsman, M.D., F.A.C.P.
HOT SPRINGS, S. D.

THE BEGINNING of the science of radiology may be traced to the electric egg, a plaything of the Abbot Nollet and the French Court in the middle of the eighteenth century.

Wilhelm Conrad Roentgen, while working with a Crookes tube, discovered the x-ray on November 8, 1895. His announcement of the discovery on November 28, 1895, took the world by storm.

In 1896 Antoine Henri Becquerel gave a series of lectures on the radio-activities of metals before the French Academy of Sciences. He included in his lecture of February 24, 1896, the information that uranium salts would affect a photographic plate in the same way as it is affected by sunlight even though the plate be enclosed in light-proof paper.

The two famous scientists, Pierre Curie and Marie Sklodowska, became acquainted in 1894. They were married in 1895. They were both well trained in physics and in mathematics. They were much interested in the study of crystals.

Soon after Becquerel's discovery of the radio-activity of uranium he suggested to the Curies that they investigate the phenomenon. They, in working with pitch-blende, made the discovery of polonium and radium and announced the discovery in 1898. Polonium is now known as Radium F.

In 1901 Becquerel accidently discovered the destructive effect of radium on the human skin. Animal experiments followed. Out of this finally grew our present knowledge of the use of radium in therapy.

In 1903 certain radium salts were isolated in pure form by Madam Curie. In 1910 she and DeBierne isolated the radium element itself. In 1903 the Curies and Becquerel were jointly awarded the Nobel prize. I need not add that Pierre and Marie Curie made themselves a place in world history that will become more brilliant as time goes on and that can be effaced only by the collapse of civilization.

Radium is a metal. In minute quantities it may be found almost anywhere. Radium ore rich enough in radium that it may be extracted is rare. Over two thousand separate steps are required to get the radium out of the ore in which it is contained.

As much chemical as ore is required to separate the radium from the ore. Until a few years ago, the radium used in this country was taken from the radium bearing ore mined in Colorado. It was found that it was as cheap to send the untreated ore to Pennsylvania to be treated as to send the treating chemicals to the mines.

Now the ore-bearing radium is mined in Africa and sent to Belgium for refining processes. The ore obtained in Africa is richer in radium than the ore that was mined in Colorado. Lately, radium in workable quantities has been found in Canada. Radium is very expensive because of its scarcity and the difficulties of refining it.

Radium is not a stable metal. It is constantly

changing its chemical form. In making this change in itself it gives off tiny particles. It is these tiny particles that affect cancer and other troubles that beset us. We who use radium are not worried about the loss of the radium because of this constant change in it. Scientists estimate that sixteen hundred and eighty years are required to half wear out a given quantity of radium by chemical changes that are natural to it.

Radium as used in treatment is a powder. It is deposited in metal or glass containers in order that it may be handled. It is placed upon or very near the condition under treatment and kept in that position for definite periods. A few hours are always required for a radium treatment. Very definite plans have been worked out for the use of radium in treatment. Radium treatment does not produce unsightly scars. The application of radium is not painful.

I have had inquiries from physicians who desire to know if radium therapy is applicable in this or that condition. Because of these inquiries I have thought that it might be well to prepare a list of the conditions in which radium may be used as a curative or palliative agent.

Early cases afford the best prognosis. There is always a time in the history of every malignant growth during which the condition is local. It is always best to attack such growth before metastasis has taken place.

1. Birth Marks: These conditions are favorably affected by the application of radium. Complete eradication must not be promised.

2. Moles: All types of moles are completely removed by a few hours' treatment.

3. Warts: The various types of warts are all quickly cured.

4. Nasal Polypi: The return of polypi after surgical removal may be prevented by intranasal application of proper quantities of radium. However, I prefer that proper surgical, instead of radium, treatment be employed.

5. Vernal Conjunctivitis: Radium properly applied will cause permanent disappearance of the granulations.

6. Thymicolymphaticus: The enlarged thymus gland is quickly reduced.

7. Lupus: These conditions are very amenable to the rays of radium.

8. Keloids: Radium is the most satisfactory treatment.

9. Lymphosarcoma: It is much benefited.

10. Hodgkin's Disease: Radium is a means of reducing the glandular involvement in this condition. It is not curative.

11. Leukemia: Radium often produces satisfactory results, especially in the splenic type. Cure is never obtained.

12. Goiter: In the exophthalmic type the results of radium treatment are very satisfactory.

13. Uterine Fibroid: Radium is used in this condition when the tumor is no larger than a four months pregnant womb. The results are very gratifying.

14. Uterine Hemorrhage: In the uterine hemorrhages of the menopause or of adolescence, radium gives better results than any other kind of treatment.

15. Cancer of the Cervix Uteri: Radium therapy is the method likely to give the most lasting results. It has supplanted surgery.

16. Cancer of the Body of the Uterus: In this condition radium should be employed first after which hysterectomy should be performed.

17. Cancer of the Tongue: Radium therapy is the method of choice because of the penetrating effect of the rays.

18. Cancer of the Lip: In this condition radium therapy far surpasses surgery. If the glands of the neck are involved, surgery must be employed in conjunction with radium.

19. Leukoplakia: This condition is usually very amenable to radium therapy.

20. Cancer of the Rectum: Radium is palliative only in most cases.

21. Cancer of the Bladder: I have had good results in a few cases.

22. Cancer of the Prostate: My results have been unsatisfactory.

23. Cancer of the Cheek: I use radium in conjunction with actual cautery by means of the hot iron or electric cautery. The less extensive the lesion the better the prognosis.

24. Cancer of the Maxillary Antrum: This is a very serious condition. I have used radium with actual cautery. This method is better than surgery.

25. Cancer of the Esophagus: Radium therapy is palliative only.

26. Cancer of the Larynx: Radium therapy is palliative. The prognosis is always bad in this condition.

27. Cancer of the Skin: If the diagnosis is made early and radium is applied complete recovery will result in all cases.

28. Cancer of the Breast: No operable case should be treated solely by means of radium. At this writing surgery is the method of choice in such cases. It is possible that soon radium therapy will be employed in preference to surgery in all cases. There are new plans of treatment now being developed which may supplant surgery in this very fatal disease. If the condition is manifestly inoperable, radium may be employed for its palliative effect.

Some time ago I had occasion to check carefully over my work with radium for the previous seven years. I have always kept a careful record of all of the patients treated, for what and just how they were treated, and employ a system of follow-up letters. The results obtained are shown in the accompanying table.

All of these patients were treated with radium. Some of them were also treated surgically and some had irradiation by both radium and x-ray.

PATIENTS TREATED WITH RADIUM

From November 10, 1923, to November 10, 1930

Diagnosis—	Cured	Relieved	Dead of Disease Treated	Dead of Other Disease	Under Observation	Not Traced	Totals
Cancer of Cervix	2	..	8	1	10	3	24
Cancer of Body of Uterus	3	..	7	..	..	1	11
Uterine Fibroid	14	2	..	..	1	4	21
Menorrhagia of Menopause	16	..	..	..	..	1	17
Cancer of Lip	30	..	2	1	8	13	54
Cheilitis	10	..	..	..	2	1	13
Cancer of Mouth	4	..	4	1	..	2	11
Leukoplakia	..	..	..	..	1	..	1
Cancer of Tongue	4	..	2	..	2	1	9
Hypertrophic Tonsil	1	2	..	..	..	1	4
Nasal Polyps	2	2	..	1	..	2	7
Tuberculosis of Pharynx	..	..	1	..	..	..	1
Cancer of Antrum	..	..	2	..	..	..	2
Cancer of Breast	4	..	5	1	..	2	12
Cataract	..	3	..	..	1	..	4
Goiter	2	..	1	..	..	..	3
Skin Cancer	41	..	3	7	5	11	67
Birth Marks	..	1	..	..	..	..	1
Skin Tuberculosis	2	3	..	1	2	1	9
Warts	13	..	..	1	..	..	14
Moles	7	..	..	..	..	..	7
Keloids	..	1	..	..	..	1	2
Cancer of Prostate	..	..	1	..	..	..	1
Cancer of Urinary Bladder	1	..	1	..	..	1	3
Cancer of Rectum	..	..	1	..	1	1	3
Bone Sarcoma	..	..	2	..	..	..	2
Totals	156	14	40	14	33	46	303

Some time ago a woman came for examination. Careful questioning revealed only that she had been feeling a little less strong for the previous three months. Upon examination, I found that her whole left breast was one great cancer. It had appeared one year before she came for help. There were daughter cancers in her liver and in her axilla. This woman had told none of her relatives nor her family physician about her trouble. She had foolishly kept it a secret.

I wish we could impress upon our patients the very great risk run by those who neglect small sores and abnormal discharges or bleeding. It may be accepted without argument that most early cancers are readily cured by radium. It is only after they have become large or have invaded other parts of the body that they are dangerous. Any sore which does not heal within two weeks is likely to be dangerous. Any abnormal discharge or bleeding should be investigated without delay.

The family physician should be consulted often. His advice is trustworthy and honest. If the public would only realize that cancer appears at any age, if careful examinations are made and if proper treatment is instituted early, we may expect a marked reduction in the cancer death rate.

It is a lamentable fact that often patients are first seen by the radiologist after all chance of recovery is past. This is, no doubt, because many patients do not present themselves for examination until after the symptoms are severe. In spite of the delay in treatment a small percentage of apparently hopeless conditions are cured and others brought under control by the proper

use of radium, the patient's life prolonged and his suffering lessened.

We do not know the cause of cancer. Until the cause has been discovered and proved we may select from the several theories which have been advanced the one which suits us individually. We may think of cancer as due to congenitally displaced epithelium, to changes in tissue balance, or to microörganisms. It is certain that age, sex, race, heredity, trauma, irritation, light, and occupation are all factors to be considered in the problem of cancer production.

Whatever the real cause of cancer we know that we are making progress in the field of prevention against this dreadful disease by the proper treatment of early cancer and precancerous conditions. Radiology has a large part in this progress. Radium may be depended upon to destroy precancerous conditions and some early cancers if they are within reach so that the application may be made directly to the lesion. If the condition has advanced too far for cure then by proper radiation we may bring about some relief from distressing conditions.

Radium must not be considered to be a cure-all. It should be maintained that radium is the best agent yet employed in certain conditions that are comparatively easy of approach so that it may be applied directly to the site of the pathological conditions.

BOOK NOTICE

A BEAUTIFUL REVISION OF ORMSBY ON THE SKIN

Diseases of the Skin, by OLIVER S. ORMSBY, M.D., with a revision of the histopathology by CLARK WYLIE FINNERUD, B.S., M.D.; 4th edition, heavy cloth, 1,288 pages and 619 engravings with three colored plates; Philadelphia: Lea & Febiger, Inc.; 1934. Price, $9.50.

Dr. Ormsby, who is clinical professor and chairman of the department of dermatology in Rush Medical College of the University of Chicago, addressed himself to the task of revising his *Diseases of the Skin* with so much dispatch and decision that this new fourth edition appears almost to be an entirely new treatise.

He has included and described in detail 36 new diseases of the skin, and he has rewritten descriptions of 20 more. He has added 124 new illustrations to the text. Here the dermatologist will find such comparatively new skin conditions as tularemia, thromboangiitis obliterans, dermatomyositis, and scleredema adultorum. There is a particularly interesting section on the new condition known as paraffinoma, and its symptomology. The section on differential diagnosis, which in dermatology can be most difficult and baffling, is remarkably clear and explicit; and the part given to radiotherapy (roentgen-rays, grenz rays, and radium) is all-inclusive.

A word ought to be said for the excellent illustrations of Clark Wylie Finnerud, B.S., M.D., assistant clinical professor of dermatology in Rush Medical College. Dr. Finnerud has contributed many sharp and clear illustrations, and also aided Dr. Ormsby in revising the histopathology of the book.

This treatise on dermatology can be recommended for either the inexperienced novice in the field, or the practitioner with years of clinical work behind him.

BALFOUR AND EUSTERMAN ON THE STOMACH AND DUODENUM

The Stomach and Duodenum, by GEORGE B. EUSTERMAN, M.D., F.A.C.P., and DONALD C. BALFOUR, M.B., M.D. (Tor.), LL.D., F.A.C.S., F.R.A.C.S., and members of the staff of The Mayo Clinic; first edition, 905 pages plus index and appendix, illustrated, heavy red cloth, gold-stamped; Philadelphia: The W. B. Saunders Company: 1935. Price, $10.00.

The first radical operation for removal of carcinoma of the stomach was in 1881, and since that date, gastric surgery has undergone a development comparable to that of orthopedic surgery since the World War or hormone investigation since 1921.

It is the theory of William and Charles Mayo that modern medical education must of necessity be inclusive rather than profound—that the modern physician should have a working knowledge of the important principles of medicine and "a wise social understanding of those emotional conditions engendered by the ill health of the patient. . . ." To this theory Eusterman and Balfour obviously subscribe.

The net result of their new volume is a veritable unabridged encyclopædia of conditions which may visit the stomach and duodenum. There is a detailed history of diseases of the stomach and their etiology. The section given to roentgenologic diagnosis is exhaustive, as is the consideration of duodenal ulcers, pathologic and artificially-produced. Gastric syphilis, an affliction still comparatively obscure, is thoroughly considered, backed by case histories. Diaphragmatic hernia, which invaded the newspapers with such gusto last summer, is described with fine illustrations. The work concludes with diet therapies and post-operative treatments for patients.

Eusterman and Balfour and associates have produced a work which will be the prized possession of every abdominal surgeon and internist.

A VOLUME OF PSYCHIATRIC CASES

Roots of Crime, by FRANZ ALEXANDER, M.D., and WILLIAM HEALY, M.D.; first edition, cloth, gold-stamped, 305 pages; New York: Alfred A. Knopf, Inc.: 1935. Price, $3.00.

In spite of the fact that Alexander and Healy incline very strongly to the Freudian concepts of what governs human actions, this book is fresh and stimulating, and the cases have been selected with such fine distribution that a different condition is revealed in each one.

Great stress is laid by Alexander and Healy upon

dreams, and the symbols which objects in dreams are supposed to represent. The chief objection to the book is that much of it is necessarily abstract speculation, and speculation cannot be refuted: there is nothing substantial to refute. When the authors, for instance, declare that pocketbooks and purses, which a kleptomaniac repeatedly filches, represent human genitalia, there is nothing to do about such a statement. One man's guess is as good as another's.

The book is not skilfully written; but the cases presented are of value. Dr. ALEXANDER is associated with the Institute for Psychoanalysis in Chicago, and Dr. HEALY is with the Judge Baker Guidance Center in Boston.

AN ENGLISH MANUAL

Parenthood: Design or Accident? by MICHAEL FIELDING, M.D., with a preface by HERMAN GEORGE WELLS; cloth, library labels, first edition, 239 pages with 8 charts; New York: The Vanguard Press: 1935. Price, $2.50.

Perhaps the most notable achievement the author has accomplished in this little book is the relegation of the so-called "safe period" (OGINO-KNAUS, *etc.*) of human fertility to its proper position: that of only relative safety. The safe period is not, and never has been, safe for all women, and it is time that physicians realized it.

The author is an English physician who uses the name FIELDING as a pseudonym. He discusses all the contraceptives currently employed, and includes in the appendix a list of proprietary contraceptives, birth control clinics in the U. S., *etc.* The volume is sane and orderly, and appeals to reason because it does not attempt to circumvent it.

AN ENGLISH SURGICAL ANATOMY

Surgical Anatomy and Physiology, by NORMAN C. LAKE, M.D., M.S., D.Sc. (Lond.), F.R.C.S., and C. JENNINGS MARSHALL, M.D., M.S. (Lond.), F.R.C.S.; 1st edition, 850 pages plus index, 238 illustrations, heavy red cloth, gold-stamped; London, England: H. K. Lewis & Company (136 Gower Street, W. C. 1): 1934. Price, 30 shillings (about $7.50).

This work is indicative of the commendable precision and thoroughness of the British scientific mind, for it has certainly left nothing to the speculative properties of the surgeon's reason.

LAKE, who is the senior surgeon of London's Charing Cross Hospital and senior examiner in surgery of the University of London; and JENNINGS, who is a surgeon to the Charing Cross Hospital and lecturer in surgery and pathology at the Charing Cross Hospital Medical School, have necessarily condensed much of the physiology, proceeding upon the sensible thesis that the comprehensive physiological detail should be acquired by the student from a text specifically treating of that subject.

Commencing with the vascular system, the works inquires into the central and peripheral nervous systems, fascia, muscles and tendons, serous cavities, *etc.*, considering even such non-surgical entities as the teeth and gums.

The illustrations are sharp and cleanly-etched, some of them in three colors. The nomenclature adhered to by LAKE and JENNINGS is the old standard form, but the more important terms of the Basle classification are found in the index. Some of the most finished X-ray photography extant may be found in this volume.

For a thorough consideration of a labyrinthine field, this volume by LAKE and JENNINGS can be recommended with no misgivings or untoward ardor.

DERMATOLOGICAL ATLAS IN FULL COLORS

An Atlas of the Commoner Skin Diseases, by HENRY C. G. SEMON, M.A., M.D., M.R.C.P., with photography under the direction of ARNOLD MORITZ, B.A., M.B., B.C. (Cantab.); first edition, heavy red pebbled cloth, gold-stamped, 103 plates reproduced by direct color; Baltimore: William Wood & Company: 1934. Price, $12.00.

It is a joy to turn the pages of this magnificently produced volume. Doctor SEMON, who is physician for diseases of the skin in the Royal Northern Hospital in London, called upon all the resources of modern color photography and engraving to produce this volume, and it is safe to say that his achievements will not be surpassed for a number of years to come. Much credit should be accorded Doctor ARNOLD MORITZ, the photographer, who was also responsible for the excellent results in color photography seen in SEQUEIRA's *Text-book of Dermatology* and D'ARCY POWER's *System of Syphilis.*

Only scant attention has been given to treatment and prognosis of the various skin conditions included within this volume. It is an atlas—not a clinical guide or textbook, and it is enough to say that it more than exceeds the proper functions of a dermatological atlas. Differential diagnoses are given where SEMON considered them essential; and all descriptions of treatment are purposely intended to be accessory only. SEMON calls them *aides mémoires,* which is perhaps as good a phrase as any.

Within this volume, the dermatologist's eye will fall upon each important skin condition in approximately the same form and color as he will encounter it in his patients. Acne, alopecia, the dermatitises, the eczemas, epidermophytoses, the lichen infections, tinea—and many more, are all presented vividly and unmistakably. It is a work which any dermatologist, or possibly any general practitioner, would be most happy to own.

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CANCER—A CHALLENGE TO THE PROFESSION

Recent statistics presented by Rector reveal that cancer, with a mortality-rate of 102.2 per 100,000 population, is surpassed among the causes of death in the United States by heart disease alone, the latter having a mortality-rate of 227.8 per 100,000 population. Cancer mortality, like that of heart disease, yet unlike that of most other diseases, has been steadily increasing. Consequently, cancer control constitutes one of the most urgent clinical challenges of present-day medicine.

As in so many other similar problems, the solution lies in early diagnosis and prompt adequate treatment. And here again, the front line of attack is formed by the general practitioner, for it is he who sees the case first.

Either histologic or roentgenographic examinations are required for the proper diagnosis of at least 80 per cent of neoplasms, according to Rector. Therefore, early correct diagnosis of such new-growths can be assured only through the assistance of a pathologist or a roentgenologist. Such consultation service, for ideal results, presupposes that medical meetings and periodicals will be so interspersed with cancer material that the family doctor is forever cancer-conscious. Under such circumstances, he will use the consultation bureau for suspected as well as obvious neoplasms. In this way only will the diagnostic problems of cancer be solved for the rural districts and family physicians.

Proper therapy for all cancer cases is not possible in rural districts until radiotherapeutic equipment is less expensive or until highly trained surgeons are less centralized. These obstacles can be overcome by referring all cases which cannot be treated correctly by the general practitioner to surgical, radiotherapeutic or other specialists.

It is the hope of THE JOURNAL-LANCET that the articles in this issue, written by authorities on carcinoma, will prove of assistance to the members of the medical profession of the Northwest in the early diagnosis and proper treatment of cancer. E. J. SIMONS.

SHOTS FROM THE INTERNATIONAL ASSEMBLY

Those who were in Detroit two weeks ago at the International Medical Assembly, heard a rapid fire program of most practical value.

Dr. Hugh Cabot said that 90 per cent of all cortical kidney infections will clear up of their own accord; nephritis with abscesses is a misnomer, and should be called carbuncle of the kidneys. These cases should not have surgical intervention but rest in bed and heat to the back.

Dr. David Riesman of Philadelphia speaking on "Diseases of the Gall Bladder," stated

that he still used in many cases of Cholecystitis 2 grains each of sodium salicylate, sodium succinate and ox gall and believed it to be helpful.

Dr. John R. Fraser of Montreal speaking of pelvimetary said the athletic girl often has a male pelvis not suitable for childbearing. He also stated that clinical observation at the bedside would never be superceded by the X-ray in obstetric practice.

Dr. William D. Haggard said that the neuropath was the vamp of the diagnostician and the lure of the surgeon. Only 10 per cent of abdominal pains are due to gastric and duodenal ulcer. In cases of ulcer there is good appetite while in gall bladder disease there is poor appetite. The pain of duodenal ulcer comes before rather than after meals.

Dr. Charles H. Mayo speaking of goiter and the changes in its treatment said that "nervous" is not a diagnosis; there must be some explanation as in the thyroid, and then he drifted into a discussion of the endocrines in general "these captains of industry as I like to call them that look after us and keep us well." He added that "So many things are on the way and five years from now we will be doing something about insanities too."

A. E. H.

FEVER TREATMENT

The use of artificially produced fever in the treatment of disease is rapidly being placed upon a scientific basis. Many are not aware of the fact that already there have been five annual conferences on this subject in the United States, the last of which was held in Dayton, Ohio, on May 2 and 3, 1935.

A volume containing the abstracts of papers and discussions of this fifth annual conference has just been issued. This brings to date the most recent work and opinions of those who have had the greatest experience in this field and who are widely recognized for their scientific and clinical experience and attainment in other phases of medicine.

To date, the best results have been reported in the treatment of gonorrhea in both its acute and chronic stages. Papers presented by members of the staff of the University of Rochester, New York, School of Medicine, the Mayo Clinic, the Cleveland City Hospital, the University of Colorado School of Medicine, University of Nebraska, Beth Israel Hospital, the New Orleans Division of the U. S. Public Health Service, the University of Pennsylvania, etc., pointed out the great benefit of the treatment of this disease by artificially produced fever.

The thermal death point has been determined for various pathogenic micro-organisms. Of those studied to date, it appears that the gonococcus is most easily destroyed by heat although certain strains of this micro-organism are rather resistant. Fever therapy has also been found valuable in syphilis.

Duncan presented the results of his work with artificial hyperpyrexia on tuberculosis. In some cases, very satisfactory results were obtained. He calls attention to the fact that in man, the thermal death point for tubercle bacilli cannot be tolerated, therefore, he deals with the thermal non-growth point. This point can be reached for human type tubercle bacilli by the temperature tolerated by man because if the bovine type of bacillus is the causative factor, heat may do actual harm since it has a higher thermal non-growth point than the human type. He points out that cases must be carefully selected. When this is done, his results seem to definitely justify the treatment.

Numerous other conditions have been treated by fever therapy and some of them, such as chorea, intrinsic intractable asthma and some forms of arthritis, besides gonorrheal arthritis, have been definitely benefited.

Fever therapy, in a few years, will have been so completely studied that we will know for just what conditions, in addition to those mentioned, it is beneficial.

J. A. M.

GYNECOLOGIC ORGANOTHERAPY AND ENDOCRINOLOGY

When Allen and Doisy made their memorable contribution to our knowledge of ovarian function, in 1923, great things were expected in the way of practical application in the solution of what has always been a knotty problem for clinicians, for nothing in medicine has been more difficult to deal with and more uncertain of results than the therapy of ovarian dysfunction. When theelin was discovered, then, it opened the way for a tremendous amount of exploitation of its possibilities and as further research revealed the implication of the pituitary and its hormones in the physiological cycle of gonadal function it seemed as if the answer to a bothersome question had been reached. The commercial houses were not slow to grasp the opportunity and the result has been the flooding of the medical profession with a mass of "literature" and personal messages from representatives to an unusual degree. While

the information thus propagated has been very confusing and contradictory, it has had the effect of causing a considerable use of the various products put on the market and the results have, for the most part, been very disappointing. This does not discount, in any way, the value of the discoveries. They are substantial additions to our store of knowledge and the people who made them have been, if anything, ultra conservative in their claims. They have simply been swept away by the proprietary exploitation of their findings and are not in the least to blame for what has happened since.

The sensible thing for us to do is to follow the advice of the railway people and stop, look and listen. If necessary, back up a little. To help us to do this are three very useful articles in the August 31, 1935 issue of the Journal of the American Medical Association, which all are recommended to read closely. They are entitled: The Uses and Abuses of Modern Gland Products in Gynecologic Disorders, by Emil Novak; Glandular Physiology and Therapy, by Morton S. Biskind and the Report of the Council of Pharmacy and Chemistry of the American Medical Association. An open minded study of these articles will convince us of the very conservative trend of impartial workers, whether clinical or laboratory, in this field. There can be no question of the value of the advances which have been made in the matter of fundamental research; it is in the clinical application that we are still in our infancy and wherein we have been trying to run or fly before we could walk. G. C.

NEWS ITEMS

NEW OFFICERS OF THE HENNEPIN COUNTY MEDICAL SOCIETY 1935-1936

President ..... R. R. Cranmer
First Vice President ..... J. H. Simons
Second Vice President ..... K. A. Phelps
Secretary-Treasurer ..... O. J. Campbell
Librarian ..... T. A. Peppard
Editor of Bulletin ..... Gilbert Cottam

Executive Committee

J. M. Hayes, *Chairman*

W. H. Aurand — J. F. Corbett
Moses Barron — Gilbert Cottam
S. H. Baxter — E. W. Hansen

President, First Vice President, Secretary-Treasurer and Librarian, *ex-officio*.

Executive Secretary—Mr. J. H. Baker.

The new hospital at Galen, Mont., is scheduled to open on January 1st with a capacity of 65 beds.

Dr. Edward B. Tuohy, Duluth, has recently become a member of the Mayo Clinic staff at Rochester.

Dr. Gilbert Cottam has been named to the newly created position of director of health and hospitals for the city of Minneapolis.

Dr. W. F. Keller, one of the prominent political physicians of South Dakota, died at his home in Sioux Falls, from a sudden heart attack.

Dr. Isarel Lemeiux, one of the pioneer physicians of Red Lake Falls, Minn., passed away on October 17th, at the advanced age of 83 years.

Dr. W. C. Wolverton, one of the prominent physicians of Linton, N. D., died last month, after a short illness at his home in that city.

Dr. Bourne Jerome, who was a graduate this year from the University of Minnesota, has opened offices for general practice at Emmons, Minn.

Two hundred and fifty graduates of the University of Minnesota Medical School held a three days session at the campus on October 24-25-26.

The sixteenth annual meeting of the American Student Health Association will be held December 27th and 28th, 1935 at Hotel Pennsylvania, New York City.

Sisseton, S. D. is to construct a new Indian hospital that will cost about $200,000 with a capacity of 30-50 beds, with all modern conveniences.

Many counties in South Daokta, who rely on artesian wells are going dry, and efforts to clean and recase them fail to bring back the flow of water.

Dr. F. E. Harrington, Minneapolis, was elected secretary of the International Society of Health Officers at the annual meeting held in Milwaukee last month.

Dr. F. G. Carter, superintendent of the Ancker Hospital, St. Paul, for 11 years, will leave about November 15, to assume charge of the Christ Hospital at Cincinnati.

Dr. Roy F. Raiter, Cloquet, Minn., was in Los Angeles, Calif., last month where he attended the annual meeting of the American College of Surgeons held in that city.

All of the hospitals at Helena, Mont., were badly damaged, but all of the patients were removed, without the loss of any lives, by the recent earthquake in that city.

The South Dakota state board of administration plans to obtain a $135,000 PWA grant for aid in construction of a new infirmary at San Haven State Tuberculosis Sanitarium.

Dr. A. M. Lafferty, who was in active practice for many years at Minot, N. D., is confined in an Alberta, B. C. hospital, with little hopes that he will recover from a long illness.

One Henry H. Koller, was convicted at Albert Lea, Minn., recently for practicing healing without a license and was informed that he must leave the state at once.

Dr. F. H. K. Schaaf, Minneapolis, was the guest speaker at the last meeting of the Renville County Medical Society, held at Olivia, Minn., his subject being "Advances in Therapeutics."

The Yankton Medical Society held their opening fall meeting in that city last month, with Drs. A. F. O'Donoghue and A. C. Starry, of Sioux City, Iowa, as the principal speakers on the program.

Dr. Charles M. Kistler, Minneapolis, who has recently returned from an extensive educational tour of Europe, says: "I found the greatest clinics that I visited had no advantages over those in this country."

Popson, Montana, holds an annual "Hospital Day," each year, when they receive large contributions of linens, canned fruits and vegetables. The hospital is one of the most modern in that section of the state.

Wright County Medical Society held their annual meeting at Delano, Minn., and elected Dr. V. P. Johnson, Delano, president; Dr. W. P. Anderson, Buffalo, vice president, and Dr. J. J. Catlin, Buffalo, secretary.

Dr. Morris Fishbein, editor of the Journal of the American Medical Association, Chicago, was the guest speaker at the University of Minnesota Convocation, October 24, his subject was "Food Fads and Follies."

Osteopaths in South Dakota may perform all but major operations and may prescribe morphine and other medicines compatable with the needs of the general osteopathic practitioner, the attorney general has ruled.

Dr. F. Draper Hurd, of Tolley, N. D., has accepted a fellowship in otolaryngology at the University of Minnesota Hospital in Minneapolis, and will begin his service there on November 1st. Dr. Hurd was graduated from the University in 1924.

The South Dakota Health Officers Association held its annual meeting at Huron last month and elected Dr. W. F. Bushnell, Elk Point, president; Dr. C. E. Sherwood, Madison, vice president, and Dr. B. A. Dyar, Pierre, secretary.

Dr. Adolph M. Hanson, Faribault, Minn., was the guest speaker at the last meeting of the Minneapolis Clinical Club, presenting a fine paper on "Some Aspects of Thymal and Pineal Problems." The club voted the doctor a life honorary member.

Dr. Charles G. Nordin, a prominent specialist in eye, ear and throat practice, passed away on October 10, at his home in St. Paul. Born in St. Paul, where he was in active practice for the past ten years, the doctor was a graduate of the University of Minnesota.

The following physicians have been appointed to the state Optometry Board of North Dakota: Dr. L. G. Power, Minot; Dr. J. A. Krebsbach, Fargo; Dr. J. E. Countyman, Grafton; Dr. H. A. Brandes, Bismarck, and Dr. W. H. Long, Fargo.

St. Paul Surgical Society has been organized with Dr. H. B. Zimmerman, president; Dr. E. M. Jones, vice-president, and Dr. N. L. Leven, secretary. The society will establish a closer contact and be able to present and extend more accurate surgical information.

Dr. E. L. Perkins, Sioux Falls, has been appointed as the physician of the South Dakota penitentiary, to succeed the late Dr. W. F. Keller. Dr. Perkins is one of the pioneer physicians of the state and has always taken a leading part in promoting local and state medical affairs.

The Minnesota State Medical Association broadcasts weekly at 11:15 A.M. every Tuesday over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month will be as follows: November 5th—Socializing Children; November 12th—Heart Murmurs; November 19th—Digestive Complaints; November 26th—Functions of the Teeth.

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Changes Confronting Modern Medicine*

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Chicago, Ill.

MEDICAL Economics is as old as medicine. History records that the edicts of the early emperors provided that physicians give medical care to the poor without pay. In his letter to Timothy, Paul expressed something of the economics of the times when he said, "the laborer is worthy of his hire."

In the early centuries of medicine, physicians were absorbed in developing from the masses of mysticism, superstition, folklore and unrelated empiricism, a more orderly array of truths, demonstrable facts, and logical procedures. It was Hippocrates who sometime in the fourth or fifth century before Christ, gave to medicine its scientific spirit and its ethical ideals. It was he who established the bedside medicine which has proved its worth over these many centuries.

Medical history is filled with an almost unending account of romance, adventure, pioneering, sacrifice, freedom of action, and glorious accomplishment. With the advent of our complex modern civilization, the machine age of industry, the growth of large urban centers, and the unfolding of science, the practice of medicine took on new aspects, new implications, and new possibilities. Never since the founding of the first medical school in the fifth century before Christ have there been greater responsibilities resting on the medical profession than at present.

*Presented at the Fifty-seventh Annual Meeting of the Medical Association of Montana, at Helena, July 3, 1935.
†Director, Bureau of Medical Economics of the American Medical Association.

Medicine has always had as its primary objectives, the welfare of humanity, the relief of individual suffering and physical handicaps, and the improvement of the public health.

Because of the nature of medicine and people, the medical profession more than any other, has acquired the characteristics of individualism. For centuries, few if any attempts were made to alter this individualistic characteristic. Not until 1883, when Bismarck introduced sickness insurance in Germany, did there appear a movement destined to become the largest single disturbing factor in medicine. Since that time, sickness insurance was adopted in Austria in 1887, in Denmark in 1892, in Sweden in 1910, in Great Britain, Switzerland and Norway in 1911, and in France in 1930. At present, most of the principal countries of Europe, Chile in South America, and Japan in the far east, have adopted some form of sickness insurance.

Although for many years there was no secret about the operation of sickness insurance in Europe, it was not until 1932, when the Committee on the Costs of Medical Care released its final report, that this issue was urged upon the American people and the American medical profession. Prior to this time, the House of Delegates of the American Medical Association had repeatedly recorded its opposition to all forms of compulsory, contributory, schemes of sickness insurance or state medicine, provided, controlled

or regulated by any state or the Federal Government.

Shortly after the release of the final report of the Committee on the Costs of Medical Care, propaganda was spread broadcast in which it was alleged that the medical profession was unprogressive and obstructive, and that the people were not receiving the medical care which they needed. Evidence to the effect that the medical profession has been progressive may be found in the consistent endeavor to raise the standards of medical education, medical licensure, and hospital practice. The most recent effort of a progressive and dynamic nature is the organization of boards composed of outstanding physicians in various specialties to issue certificates of qualification to other physicians in that specialty. All this has been carried on without thought of personal gain or aggrandizement, but for the purpose of increasing the quality of medical care for the American people. Moreover, in the more strictly scientific phases of medicine, there have been innumerable advances in diagnosis and therapy, and in the reduction of the incidence of many diseases which formerly took a heavy toll of life, to say nothing of the tremendous cost in suffering and inefficiency. In a century, the average life expectancy at birth has been increased from 28 to 59 years. This battle against disease and untimely death continues.

No social industry or economic system yet devised by man, has attained absolute perfection. The medical profession has long recognized some of the weaknesses in the present methods of medical practice, and it has never been opposed to change if that change brought into the system of distributing medical service, methods that were superior to those already in use. The medical profession has constantly sought to analyze critically, and correct appropriately, deficiencies within its own field.

Examples of the efforts of the medical profession to improve various types of medical care are to be found in the attempts to change the method of caring for the indigent sick from the traditional politically appointed or contract county or city physician, to the county medical society; the constant efforts on the part of the medical profession to improve the provisions and regulations in workmen's compensation for medical care to the injured workmen; the efforts to eliminate clinic, dispensary and hospital abuse, and the plans by large numbers of medical societies to devise means by which the low income groups may pay something for medical services and thus remain self-supporting.

Times of economic depression offer the greatest opportunity for panaceas and hastily conceived schemes. During the past few years, the public and the medical profession have not been immune to such proposals. This period has been marked by legislative, social, and economic changes far greater than have ever been witnessed in a previous similar period. The medical profession can not hold itself completely aloof from these changes, but as times and institutions change, bringing with them certain effects on medicine, the medical profession must still cling to sound principles if it is to remain a free and independent institution.

In the face of all the proposals to alter the method of distributing medical services, the medical profession must exercise the same methods of careful examination and thorough testing that have characterized its evaluation of diagnosis and treatment over many decades. It is appropriate during these times to remember the oft repeated adage, "be not the first by which the new is tried, nor yet the last to lay the old aside."

Already, some 200 county medical societies are considering or are operating some type of medical service plans. In this connection, there seems to be a tendency to copy the actions of others. Unless there is a definite need for a medical service plan, the tendency to copy without due regard to actual needs may lead to serious consequences. There is danger of a pandemic of "planitis." Not every community needs a complete reorganization of medical facilities.

In the brief time allotted for this discussion, it is impossible to discuss all of the actions of the House of Delegates or to present in detail the report of the Bureau of Medical Economics which was adopted by the House of Delegates at the annual Session in Atlantic City, suffice it to say that the House of Delegates at the 85th Annual Session held in Cleveland in 1934, adopted 10 principles to be followed by all constituent bodies of the American Medical Association as basis for the conduct of any social experiments that might be contemplated by them. At the Special Session of the House of Delegates in February, 1935, that House reaffirmed its opposition to compulsory sickness insurance, and directed the Bureau of Medical Economics to make a report on the medical plans now in operation or being contemplated.

In the report of the Bureau of Medical Economics there is no attempt made to determine for medical societies the changes which may be necessary to perfect a more complete and equitable

distribution of medical services in their communities. An endeavor was made to outline the method of procedure in the development of new methods of distribution of medical service, should the medical society consider them necessary.

Particular attention should be given to that section of the report which deals with the dangers and complications which may accompany even the most carefully designed and conscientiously administered medical service plan. These dangers are as follows:

1. The adoption and operation of a medical plan where it is unnecessary.
2. The stimulus aroused by good plans among irresponsible organizers to develop and operate imitations and counterfeits.
3. The establishment in medical practice of dangerous patterns following the adoption of undesirable types of plans.
4. The compromise of medical societies in the corporate practice of medicine or in the operation of insurance companies as a result of an insufficient study of state statutes and case law.
5. Failure, in the operation of a plan, to conform to the Principles of Medical Ethics.
6. The almost inevitable transition of voluntary insurance plans into compulsory contributory sickness insurance systems operated by the state.
7. The difficulties involved in or the failure adequately to provide for complete control of medical affairs by the medical profession.
8. The "freezing" of medical fees at a point below that which is consistent with good medical service.
9. Failure to bear constantly in mind that a medical society plan is an experiment in the methods of distributing medical service and that it may have only a temporary usefulness, may need frequent or drastic modifications or may need to be discarded entirely.
10. Medical society plans must not be considered or accepted as a substitute for the regular practice of medicine as applied to the majority of people. If it is believed such plans may be useful, they should be considered merely as supplementary facilities in the distribution of medical service. They should be used only so long and in such a manner as they serve efficiently to make more easily available to low income groups a high quality of medical care.

If and when general economic conditions return to a more nearly normal state of prosperity, I am of the opinion that many of the medical economic problems will be solved. However, whenever deficiencies or inequalities in the distribution of medical service exist, they should be studied carefully and an effort should be made to improve the situation. This may be done in most instances without the adoption of a complete and cumbersome plan.

In order that the people may continue to be served well, both in sickness and in health, the medical profession must continue to advance scientifically; it must continue to give good medical service; it must devise means where necessary, of making medical service available to all, at first adjusted to present economic conditions; it must more closely co-ordinate curative and preventive medicine; it must present a single collective voice and consistent efforts regarding social, economic, and legislative affairs; it must not merely oppose, but it must be positive and constructive in its suggestions and actions for the betterment of medical service. Furthermore, the medical profession must prepare oncoming generations of physicians while still in medical schools, for a better understanding of medical economics; it must cling to the principles of medical ethics; ethical medicine must continue to differentiate sharply between honest, scientific medical care, and the spurious imitations of the cults, quacks, and charlatans. The medical profession must continue to believe in medicine as an institution, it must continue to maintain that medical service shall be judged by and administered by those qualified through education, licensure and experience. Then and only then, shall medicine be preserved as a free and independent institution in the best interests of both the people and the medical profession.

SPINAL ANESTHESIA COMPLICATED BY THE BREAKING OF THE SPINAL PUNCTURE NEEDLE

ERNEST R. ANDERSON, M.D.
MINNEAPOLIS, MINN.

IN THE process of inducing spinal anesthesia the breaking of the spinal puncture needle is a serious and disturbing complication. This situation gives rise to several questions. What is the exact location of the broken fragment? What should be done to facilitate the

localization? Will the needle cause disturbing symptoms or produce tissue damage? When and how should this foreign body be removed? What is the best procedure to follow in informing the patient?

The following case report is given in detail to clarify this subject. A spinal anesthesia was to be given a white male weighing 157 pounds. The patient was placed in the left lateral position with the back acutely flexed. After injecting in the fourth lumbar interspace two cubic centimeters of a one per cent novocaine solution containing ephedrine sulphate grains three-fourths, a B-D short bevel twenty-two gauge erusto spinal puncture needle was passed through the skin, through the subcutaneous tissue and into the interspinous ligament. The needle was passed slowly and cautiously. It met an obstruction when it had passed two and a half inches beneath the skin level. The needle was partially withdrawn and reinserted into the interspinous ligament. Because it still did not pass easily, it was completely withdrawn. The needle was found to be broken one and a fourth inches back of the bevel, the broken piece remaining in the tissues.

A nick in the skin was immediately made at the site of the needle puncture to identify the point of introduction as well as the lumbar interspace where the fragment was lodged. By performing a spinal puncture in the third interspace, anesthesia was then established and the excision of an internal semilunar cartilage was performed.

After leaving the operating-room, the patient was informed of the complication and plans for the removal of the broken needle were discussed with him.

Four days later, Dr. R. C. Webb had the patient brought into the operating-room and placed prone upon the table. The skin was infiltrated with a one per cent novocaine solution. A spinal puncture needle was introduced into the fourth lumbar interspace, which was identified by the skin nick previously made. For the purpose of localization, three different metallic instruments were placed upon the skin one inch from the puncture needle; one was placed cephalward, one caudalward, on the midline, and one to the left. Anteroposterior and lateral X-rays were taken with the portable unit. The broken needle was seen to be one and a fourth inches long. It lay to the left of the introduced needle in the fourth interspace with the closest end one and a half inches from the skin.

A longitudinal midline incision was made one-fourth of an inch to the left of the intact spinal puncture needle. The incision was carried through the subcutaneous tissue and the fascia of the left sacrospinalis muscle. This muscle was separated from the spinous processes and from the interspinous ligament and then retracted. Care was exercised to avoid dislodging the fragment by sponging or by instrumentation. The broken fragment was readily found and

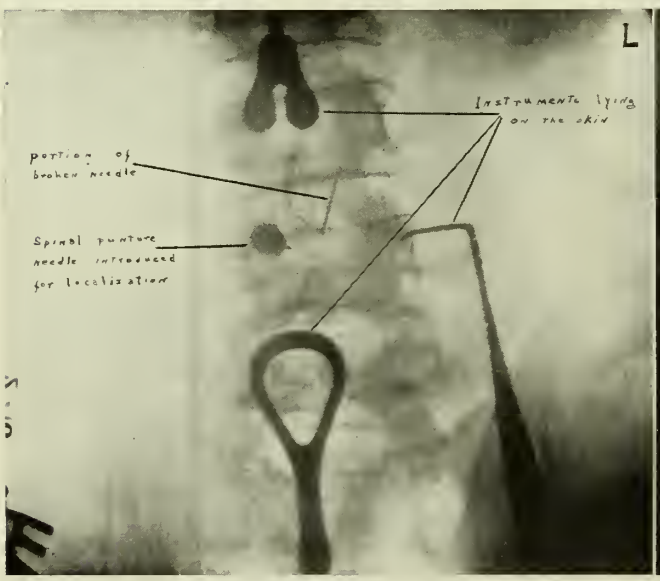


FIGURE 1

Anteroposterior X-ray, showing the position of the broken needle, the introduced spinal puncture needle, and the three instruments lying on the skin.

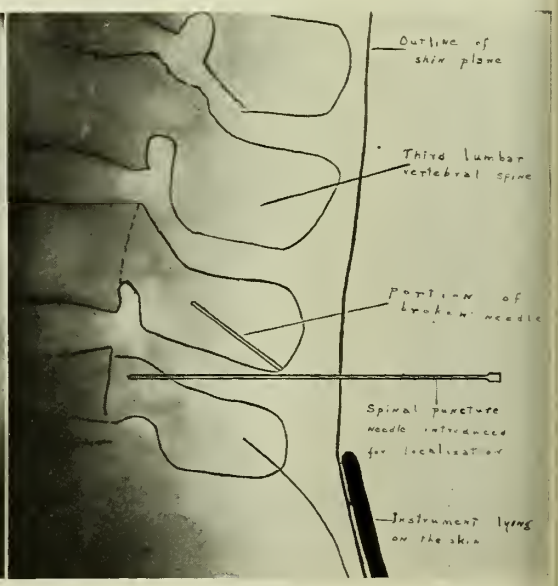


FIGURE 2

Lateral X-ray with the anatomical structures outlined, showing the relative positions of the broken needle, with the introduced spinal puncture needle and the instrument lying on the skin.

withdrawn by inserting a forceps into the place where the X-ray had indicated the lodged needle to be. The incision was then closed in layers. The patient's convalescence was uneventful and his stay in the hospital not prolonged.

The localization of the embedded fragment was definitely aided; first, by placing a nick in the skin at the point of the entrance of the spinal puncture needle at the time of the initial puncture; second, by introducing a needle into the lumbar interspace where the broken needle was located; and third, by taking with the portable machine anteroposterior and lateral X-ray pictures including the predetermined landmarks. These X-rays were taken after the patient had been placed upon the operating table in position for operation.

Under magnification, the broken end of the withdrawn needle was seen to consist of four segments of ninety degrees each. Two of the segments were discolored brown, as if rusted, and two were shiny. These segments were in alternate positions at the end of the needle. Because of the appearance of the broken end it seemed that the needle was defective, the two rusted areas having weakened it. At the maximum, the broken needle had been in service three months and during that time had been used about twenty-five times. It was learned from the manufacturer that the needle was made of Firth Brearley stainless steel. This steel does not rust when it is polished, but it is possible to polish only the outside of the needle.

Because rigid sixteen-gauge needles did break, the smaller flexible needle was developed. However, breaking may still occur. Spinal puncture needles are commonly broken when the patient quickly extends the spine. The smaller needles are sheared off by the movement. The patient should be firmly held so that his back can not be unexpectedly straightened.

The spinal puncture needle may also break due to improper care. The needle should be prepared by being thoroughly dried after cleansing. Oil should not be used on this steel because it causes an electrolytic action which promotes rust. In sterilization the needle and the stylet should be separated. Before its introduction, the needle should be tested for a weakened spot. The stylet should be withdrawn and then the needle bent by grasping at each end. If there is a weak corroded area it will then be detected. After the needle has been inserted and its course has to be changed due to meeting an obstruction, it should be withdrawn to beneath the skin and reinserted into the interspinous ligament. The direction can not be changed by bending it without danger of breakage.

A broken needle should be removed. The time of removal has varied from immediately after the occurrence of the accident to a period several months later. It is conducive to the peace of mind of both surgeon and patient to have the fragment removed. When the needle is so situated that it produces nervous disturbances peripherally, or pain locally, immediate removal should be done. In cases where the fragment is silent it may be advisable to proceed with the planned operative procedure and remove the needle later. Babcock[1] reports removing one that had been *in situ* for fifteen days. Oglobeina[4] removed a broken needle that had been in place for twelve months. It had been symptomless for ten months, and after that had caused localized pain in the back.

If it is impossible to find the needle, the procedure advised by Lahey[2] may be helpful. The sacrospinalis muscles are separated from both sides of the spinous processes, allowing the interspinous ligament to be palpated between the thumb and the index finger. When Landry[3] could not locate an embedded needle, he resorted to the resection of the spinous processes and interspinous ligament with the contained fragment *en masse*.

Conclusion

Semiflexible needles made of a good quality steel should be used. The needles should be properly cared-for to keep them from rusting. All needles, before their introduction, should be tested with the stylets removed. Care should be taken to prevent any movement of the patient when the needle is *in situ*.

When a spinal puncture needle breaks, leaving a segment embedded, the site of the puncture should be localized. The patient should be informed of the breakage and the broken needle removed. The localization and the removal of the segment are aided by passing a second spinal puncture needle and by taking anteroposterior and lateral X-rays.

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MEDICAL AND SOCIAL ASPECTS OF BIRTH CONTROL*

SOPHIA J. KLEEGMAN, M.D., F.A.C.S.†
NEW YORK

MANY adjectives have been used to describe birth control. Some I would not dare mention in polite society but the expression most frequently used about birth control is: "Oh! Don't let's have anything to do with birth control—don't let's even discuss it—it's a controversial subject."

There is so much strife and friction and contention in the world today, that being peace-loving, I feel especially shy of any controversy, and so, although I have come to you to talk about birth control, I shall avoid every controversial phase of it and confine myself to proven facts and accepted standards, omitting personal beliefs and theories.

I shall not take up the question as to whether every woman has the human right to decide for herself when she should bear a child and how many she is to have. I shall not discuss the proven relationship between overcrowding of population and war. There is much about which I shall not speak; there is much that I shall omit. I shall present these main facts:

1. Birth control is necessary for the maintenance of health and the prevention of disease.
2. Birth control is an economic necessity.
3. Birth control is moral.
4. Birth control is a most important phase of social service.

Birth Control as a Health Measure

I shall take up the health aspect first, although the health of an individual or family is so inextricably intertwined with its economic status that it is hard to differentiate as to where the medical aspect ends and the economic aspect begins.

We will all agree that a doctor's work is to cure disease and that his foremost duty is to safeguard health and prevent disease, whenever, possible. It is from the standpoint of prevention of disease that I am a firm believer in birth control education. First let us have a definition of terms. What is birth control? Just what it says—control of births. It does not mean only prevention of births. It means advising and helping conception in some instances; and preventing conception, either temporarily or permanently in other instances. However, in reality, the bulk of the work of birth control is contraception, because the urge for parenthood is so strong, that it calls for family limitation more often than for family increase. But it must be remembered that family increase as well as family limitation is included in birth control. Since my work has brought me into professional contact with many thousands of New York City's poorest, I have seen that birth control education is one of the crying needs of the underprivileged.

To come back to the health point of view. Some years ago, Dr. F. C. Holden, an authority in the field of obstetrics and gynecology, wrote a paper on the importance of baby-spacing. In that paper, he presented these facts: That it is agreed among medical authorities that there should be an average interval of two years between successive pregnancies for the health of mother and baby. This interval is needed not only for the mother's recuperation of both her local tissues and general health, but also for the safety of the baby, for it has been shown that when babies are born at shorter intervals, the infant mortality is greatly increased thereby. Of children born only one year apart, 147 out of 1,000 die before their first birthday; if born after an interval of two years, only 99 out of 1,000 will die; if after an interval of three years, the mortality rate drops still farther to 86.5 out of 1,000. It has also been proven that when the second baby is conceived before the first baby is a year old, that first baby is three times as likely to die as under other circumstances. You see, therefore, what a very important influence proper baby-spacing has on life and health.

Also, maternal mortality has a direct bearing on the infant mortality, as a child's survival depends to a large extent on its mother's survival. The infant mortality among those whose mothers die before the baby reaches its first year is four or five times as high as among those whose mother survives, and when the mother dies during the first few days after birth, the mortality of those infants is seven times as great. Mortality among older children is also much higher in motherless families. These are not suppositions and theories, but well established facts, fully substantiating the advice of leading medical authorities that there should be an average interval of two years between pregnancies, or a longer interval where the health of the mother demands it.

Importance of Birth Control to Maternal Mortality

The high maternal mortality is the foremost medical problem before the profession and laity today. It has a unique place in mortality statistics

*Address given before the Minnesota State Convention of Social Welfare Agencies, Minneapolis, Minn., September 19, 1935.
†Assistant Clinical Professor of Gynecology, New York University College of Medicine.

because of the age of the patient and the importance of the mother to the well-being of the home, and since maternity is supposedly not a disease, but a normal process, a resultant mortality therefrom is more shocking than in any other group of deaths.

Several serious studies have been made of a large number of maternal deaths. These have brought to light many astounding facts, none more appalling than the terrible toll which abortions take of the women in this country. The Children's Bureau published in 1934 a study of 7,500 consecutive maternal deaths in fifteen states during the years 1927 and 1928. This showed that 25 per cent of these deaths were due to abortions. In the New York Academy of Medicine three-year study of all maternal deaths in New York City, 1930-1932, 17.5 per cent of the deaths were due to abortions. In this study, the abortion deaths increased from 13.5 per cent in 1930, to 21.2 per cent in 1932. The corresponding economic conditions of those years cannot be overlooked. Of all these deaths, in practically all cases, the abortions were criminally induced. Genuinely accidental abortion is a negligible factor in these death rates.

The great lesson of these studies cannot be overlooked—that modern methods of contraception would have prevented 95 per cent of these abortion deaths. These studies have shown only the deaths from abortions. No studies have ever shown the tremendous amount of illness, and in many instances prolonged, if not permanent invalidism as a result of induced abortions. It is horrible and unbelievable. Twenty-five per cent of all gynecological cases admitted to city hospitals are women ill as the direct after result of abortions, with the terrific cost to the city for their care, and the even greater cost to the patient and to her home. These abortions are brought about in 90 per cent of the cases by conscientious married women who already have more children than they can possibly take care of.

At an annual meeting of the Pennsylvania State Medical Society, held in 1934, Dr. Frederick C. Holden read a paper entitled, "Why Women Die in Childbirth—Reasons and Remedies." One of the reasons he gives is this ghastly toll which abortion takes on the health and life of the women of this country. After presenting the figures which you have already heard, he goes on to say that, "Of the other maternal deaths, some were due to too high a degree of multiparity; in another group they were due to the fact that the women were in no physical condition to undergo the ordeal of pregnancy and parturition." He recommends as a life saving measure that there should be a birth control clinic as an integral part of every obstetrical service and that every patient should be given proper contraceptive instruction as part of her post-natal care.

The Morality of Birth Control

Particularly in social service, we cannot take care of the body at the expense of the soul, and in birth control especially, we must consider carefully the moral aspect of the subject. Birth control is moral. Here again I shall avoid any controversial phase, and shall quote verbatim the pronouncements of the various religious sects.

Organized religions which have been the most powerful opponents to any contraceptive educational measures have in the last few years changed their medieval attitude to a very far-sighted endorsement of the need of birth control.

Before the general convention of the Protestant Episcopal Church in 1934, the following resolution was proposed by Bishop S. A. Huston, of Washington: "We endorse the efforts now being made to secure for licensed physicians, hospitals and medical clinics freedom to convey such information as is in accord with the highest principles of eugenics and a more wholesome family life, wherein parenthood may be undertaken with due respect for the health of mothers and the welfare of their children."

To the credit of the courage and vision of the Protestant Episcopal Church, the resolution was passed.

Similar endorsements have been made by the General Council of Congregational and Christian Churches, Universalists, American Unitarian Association, Central Conference of American Rabbis, Rabbinical Assembly of America, New York Eastern Conference and Pacific Northwestern Conference of the Methodist Episcopal Church, the Women's Problems Group of the Society of Friends, Federal Council of Churches of Christ in America, the Lambeth Conference of Bishops of the Church of England, and many other religious groups.

The Roman Catholic Church and several of its leaders have also courageously faced these troublous days, and realized that birth control is both necessary and moral. Dr. Leo J. Latz, a devout Catholic, wrote a book about this problem. This book, called "The Rhythm," first published in 1933 under ecclesiastical approbation, presents the viewpoint of the Catholic Church towards birth control. It accepts, endorses and recommends a natural method of family limitation where such a procedure is indicated because of physiological,

psychological, economic, or social conditions in which a particular married couple finds itself.

This book is written in the form of questions and answers, of which I shall quote two: Q. "Are married people obliged to bring into the world all the children they can?" A. "Far from being an obligation, such a course may be utterly indefensible. . . . 'Broadly speaking, married couples have not the right to bring into the world children whom they are unable to support, for they would thereby inflict a grievous damage upon society.' Procreation of a large number of children may proceed from as base motives as prevention of birth of any, and hence may represent an equal perversion and desecration of marriage." Q. "What good is expected to follow from the dissemination of this knowledge?" A. "First of all we might have a right to expect that the married lives of many couples will be vastly enriched with the values, physical, psychic, and moral, of married life as it was intended by the Creator. Burdens that test human endurance to the utmost limit, and to which all too many succumb, will be lightened. I speak of economic burdens, the burdens of poverty, of inadequate income, of unemployment, which make it impossible for parents to give their children and themselves the food, the clothing, the housing, the education, and the recreation they are entitled to as children of God. I speak of physiological burdens, the burdens of depleted physical energies and exhausted vitality resulting from a previous birth or miscarriage, the burden of chronically or temporarily adverse conditions of the heart, the kidneys, or other organs, or of conditions that threaten the life of the mother in case of pregnancy. I refer to psychic burdens, not infrequently more difficult to bear than any I have so far mentioned, burdens of uncontrollable fear, anxiety, irritability, or rebellion against God and His Church for seeming to make demands beyond human nature, beyond human power to endure."

Nowhere have I ever seen the cause for birth control put so adequately, so beautifully, and with such complete understanding of every phase of the problem.

The Catholic Church, therefore, heretofore held up as the most powerful foe of birth control education, has in reality become one of its clearest and most forceful proponents. The principle has been accepted that family limitation is not only a right but a duty, where physiological, psychological, economic, or social conditions demand it. The only difference of opinion lies in the choice of method. The Protestant Episcopal Church, and most other religious sects leave the method in the hands of the medical profession. The Catholic Church unequivocally condemns medical methods, and advises the use of the so-called "safe-period" as a contraceptive method, and the only one of which the Church will approve. I shall not take up the controversial discussion involving the merits or demerits of any method. I only wish to stress the fact that religion approves and accepts the morality of family limitation under the conditions quoted. Let each woman be guided in her choice of method according to her own religious principles. If she wishes to try the "safe-period," that is her privilege, and she should be guided accordingly. If she wishes to use the method most uniformly advised by the medical profession, that is equally her privilege—and her right, and the medical profession and social agencies are in duty bound to give her the best contraceptive instruction available. We have no right to infringe on anyone else's religious scruples—nor should other's religious tenets be imposed upon us.

Birth Control and Social Service

Birth control is an important phase of social service. What is the chief aim of social service—to protect and help to build up and to maintain the security of the family—that ideal of social service—to make the home secure. To attain this ideal, every social worker—married or unmarried, must have some knowledge of the problems of family relations; for, to make a home secure, there must be harmony. For a harmonious home, there must be marital adjustment. Normal marital life means regular sex life, and for a normal, healthy couple in the child-bearing age, the average frequency of intercourse is once or twice a week. The various religious sects have accepted the fact that continence in the married state is not desirable because it is injurious to the harmony and security of the home. Therefore, every normally fertile couple must use some method of contraception a large proportion of the time for health reasons alone. A healthful, safe method helps towards normal sex life—the reverse is likewise true. Unsafe methods of birth control, besides being a danger to the harmony of the home, are often a direct cause of illness or even death of the mother due to the abortion to which she all too often resorts, to end an unwanted pregnancy when the unreliable contraceptive method fails.

Fear of pregnancy leads to fear of sex life, with resultant disrupted marital relations which will so often disturb the harmony and security of the home. All this the social worker must know and

the problems arising therefrom, she must be trained to recognize.

Three common by-products of ignorance of safe contraception are abortion, venereal disease and divorce. Studies of venereal disease show that there are over six million syphilitics in this country, and two to three times that number suffering from gonorrhea. The frequenters of houses of prostitution are for the most part married men who, being denied normal sex life at home, turn to prostitutes, with the greatly increased danger of acquiring venereal disease and in turn bringing it back to the home. Removing the fear of pregnancy on the part of the wife would be an important factor in keeping many of these married men at home and faithful to their wives.

Studies of the divorce problem also show that the most important cause of divorce is marital maladjustment, in many instances directly attributable to fear of pregnancy. Studies of juvenile delinquency show that two-thirds of all juvenile delinquents come from the broken home, that is where the mother has died, or where there is an unsympathetic stepmother, or where the parents have been divorced.

Birth control education, therefore, besides being the most important and effective measures in the prevention of abortions, will also help materially to lessen venereal disease, divorce and juvenile delinquency.

All of us know full well how economic insecurity will increase the need of birth control information. In addition to the health reasons, birth control, especially at present, is an economic necessity—for the health of the family and particularly for the health of the children. The health of any individual is very dependent on his economic background. Since peace of mind is just as vital for good health as any food or any medicine, adding to one's already too heavy burden of anxiety and responsibility by having more children than can be taken care of will injure the health of the family and of every component unit thereof.

The welfare of the children already born is seriously jeopardized when a family already unable to carry the load, is still more overburdened with additional babies. Adequate care and security for the child is essential for its mental and physical well-being. Hunger and fear cannot create a wholesome environment for a baby, and yet the highest birth rate prevails in families which can least afford from any point of view to assume this added responsibility.

The Federal Relief Administration reports that over a quarter of a million babies were born into families on relief in one year and that that group of families totally supported on relief had a 50 per cent higher birth rate than any other group. This goes hand in hand with a high illness and death rate and increased malnutrition among children.

The present relief load is the government's most serious problem, and yet families on relief have the highest birth rate. I shudder to think of the psychological damage to these children born into families which are wholly supported on relief.

All of you in social service have had the experience time and again of seeing family after family accept its first relief money with the greatest reluctance; but once that hurdle is taken, all too quickly there is a change of attitude from a reluctant acceptance to a belligerent demand. What can we expect from these millions of children born and bred in that environment of complete dependence on charity? Will we ever be able to remedy the resultant damage to morale in these potential citizens of our country?

The relationship between relief organizations and the under-privileged needing relief is one of mutual responsibility. The community has a responsibility to its under-privileged; the under-privileged has a reciprocal responsibility to the community.

All responsible citizens have a right to insist that there should be no waste in the expenditure of public relief funds. Is there any greater waste than for a community to finance the care of a woman through pregnancy and delivery of a child which will die before its first birthday? Is there any greater waste than to take care of a woman with a septic abortion, and then not give her that information which will prevent her having another septic abortion? If you want to translate the need in dollars and cents, it costs $5.00 to teach a woman contraception, and hundreds of dollars to hospitalize and care for a septic abortion.

The question has been put to me: Can the under-privileged woman be taught contraceptive technique? I state very definitely that the under-privileged woman, handicapped as she is by poverty, lack of education, overwork, and often with no knowledge of our language is not only teachable, but is pathetically willing and eager to learn. And yet where birth control is needed most, it is still made least available, for there is a wide gap between this large group of women who are desperately in need of this knowledge, and the source of its supply. This gap can be bridged over most successfully by the social worker. Important as

the need is, however, it is the most neglected phase of social welfare.

In municipal hospitals, women who have just had babies, and those who have just recovered from the effects of abortions are discharged without being given any contraceptive advice, although for reasons of health there should be a time interval before that patient should again become pregnant. An occasional brave social worker or interested doctor may give her the address of a birth control clinic, but there is no uniformity nor definite policy about seeing that the patient is given the knowledge she needs so badly for health's sake.

Workers of the Home Relief Bureau of New York City, and of many other cities, who are in constant touch with families who are supported on city funds, are not allowed to give any woman so supported the address of a clinic, even though she has several children, and asks for birth control information.

Is this the fault of the social service worker? Not at all. She is an employee and has to take orders. She has to carry out her duties according to the wishes and within the limitations set up by her governing board or else run the risk of losing her job. There must, therefore, be a definite and clearly worked out policy by all social service organizations and social workers in regard to this question, for the social worker is the only person to bridge the gap between the under-privileged woman who needs contraceptive advice and the clinic where it can be given her. In all contacts where conditions are such as to make additional pregnancy unwise, the social worker should make specific inquiries as to whether the woman knows of and is using a safe method of birth control. It must be incorporated in and clearly stated as the policy of the organization.

When is additional pregnancy not wise? As Dr. R. L. Dickinson has so well defined it: "A wise father and mother will have as many children as can be safely carried, safely born and adequately reared." Surely that is a human goal worth striving for.

Is it legal for a social worker to refer her client to a birth control clinic? Giving a woman the address of a birth control clinic is not against the law. Only a physician can give birth control advice, and the physician will decide the legal aspect of each case. In Minnesota it is legal for a physician to give a woman such advice for the prevention or cure of disease. In addition to the purely medical indications, any humane, understanding physician knows full well that since there is an intimate connection between the economic status of the family and the physical and psychic health of its members, it is a legitimate extension of the law to give contraceptive advice on economic grounds as well where the earning capacity of the family makes it impossible to carry, bear and adequately rear additional children.

Opposition

The opposition to the birth control educational program can be divided into two groups. There are those who practice some form of contraception in their own lives, and yet shout loudly against any attempt to give the poor, who need it most, that help. About this group, nothing need be said.

There is the second group, who are honest in their convictions in being opposed to any form of medical birth control, although even they are not opposed to family limitation. Honest convictions are to be respected, but should not be imposed on those who cannot conscientiously accept them.

In my personal experience, though, I have yet to meet an oppositionist who is married and fertile and poor.

For those who are doubtful as to the value of birth control education, I would like to have them spend one day with me at the municipal hospital, in the clinic, at the operating table, and ward rounds. I would like to show them the misery, the physical and mental suffering, the preventable operations and the preventable deaths which are directly attributable to ignorance of this important phase of life—ignorance which is due to our indifference and negligence in not giving these poor and deserving mothers that health service which we have to give. I should then like to show them the other side of the picture—my private patients, whom I am free to treat as I think best—they would see the greater chance for health and happiness this more fortunate group has. This contrast with which I am faced every day makes me acutely conscious of the fact that the spread of birth contral education is one of our major duties, and the withholding of this education is one of our greatest crimes.

Our attitude in this work must be—not that this is case No. 25,673 or bed No. 26. Regardless of the social status with which we are dealing, we must remember—she is a human being, and what would I do for her if she were my wife, or my sister, or my daughter? This standard can and must be upheld in all social service and health programs.

Our problems are so many, our burdens increasingly heavy—let us all do our share to lighten

the load, especially when we have the knowledge and power to do so.

I again stress, it is the social service worker who is the most important link in this work. It must be an integral part of all social service programs. You can and must bring the woman whom your organization or community is supporting to the birth control clinic. Referring a patient just begins the work. You are the one to follow the case so referred. Did your client go? Is she using the method as directed? Has she reported back to the clinic as often as necessary? Is there need for an additional birth control center in your community or in your settlement house? Here and now you must form an organized plan, coordinated among all social service agencies, and you have a wide awake, active, alive birth control organization that will come right along and give you all the help and advice you need.

The marvelously rapid progress that man has made in all fields of scientific endeavor—the amazing, almost miraculous achievement in the development of mechanics—the ship, train, airplane, telephone, radio—contrasted with the relatively slow progress made in human relationship of man to man, makes a disheartening picture. Is there no hope for us in this continuous struggle between progress on one side and chaos on the other? Is it true that the power of evil is far greater than the power of good?

I have always felt very strongly that there is one power more potent than either good or evil and that is that terrific and paralyzing power of inertia—the let-well-enough-alone policy—being too much creatures of habit to make any effort towards a change even when we are convinced it is for the better. This attitude of "I know it is wrong, but what's the use? We can't do anything about it." But for those of us in social service we CAN and we MUST.

I alone cannot and you alone cannot, but all of us together can, if each will add her little pull and push on that difficult climb toward better things. We have a great war to fight—a war against ignorance, disease, poverty, selfishness, ugliness and injustice.

Birth control education is not going to solve all those problems, but it is a monumental step toward materially promoting the health of the mother, the children, the family and the harmony and security of the home. It will materially lessen the terrific and unnecessary burden placed on all social service organizations.

Just a year ago in Asbury Park I addressed a similar gathering, the state conference of all the social welfare agencies of New Jersey. There again, it was the first time that the New Jersey Birth Control League had been invited to participate in that convention—and it was an inspiring meeting.

As we drove into Asbury Park, just off the shore we saw the hulk of the Morro Castle, a grim reminder of that terrible disaster which caused the loss of 124 lives. Although our memory is too short-lived, the memory of the Morro Castle disaster is still very vivid, I am sure. You remember how the whole nation was horrified—the newspapers carried the headlines and all the gruesome details for months; committees were organized, laws were changed; everyone was deeply shocked because 124 human lives were lost—perhaps needlessly lost. No expense nor effort is to be spared in order to prevent the possibility of a similar tragedy.

This public response was right. We should not be humane had we responded in any other way. And yet, in this country alone, we have a Morro Castle that meets with terrible disaster every year causing the deaths of not only 124, but of between two to three thousand young women, many of them mothers of little children. I refer to the abortion deaths which occur every year in this country, abortions brought about in over 90 per cent of the cases by conscientious married mothers who risk and lose their lives because they do not want to increase the deprivations of their children already born. With our present knowledge of contraception, we could save 95 per cent of these lives. The most important link in preventing this terrible waste of human lives is the social worker. She will always be in direct contact with the greatest need; her eyes must be open to see and her hands must be free to help.

I have talked too long, but my memory is filled with the unbelievable amount of misery and suffering caused by this terrible and unnecessary gap in social service work. I have given you many statistics, and figures are tiresome. But every figure is a picture, and when I speak of these thousands of abortion deaths, it is a series of agonizing memories. The face is a little different—but the composites are all very much alike.

The week before I left, on making rounds in the septic ward of one of New York's great hospitals, I came to the bed of a young woman of 26, fine, uneducated but intelligent, conscientious, devoted to her two children and keeping them remarkably well cared for, although the family had been wholly supported on home relief for the past two years. The husband and these two little chil-

dren were at her bedside as she was dying from the result of a self-induced abortion. "Didn't you know," I asked this patient, "that there are birth control clinics where you could be taught a safe method of contraception?" "No," she said, "I never was told about that"; and yet she had been in continuous contact with social welfare workers for two years.

I shall leave you with this message from that poor dying mother and thousands like her. Let no woman who is being looked after in any capacity by a social worker ever be able to say, "I did not know; nobody ever told me."

MINNESOTA TUBERCULOSIS MORTALITY

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THE PURPOSE of this paper is to present tuberculosis mortality rates in Minnesota by sex and age, with trends as noted over the period of years 1920-1933 inclusive.

Table I and Figure I are comparisons of the crude mortality rates of Minnesota with those of the registration states of 1910, over the period 1910 to 1933. The rates for Minnesota have been consistently lower than those for the registration states, although both have exhibited a marked decline.

TABLE I
Tuberculosis Mortality Rate Per 100,000 Population

Year	Registration States 1910	Minnesota
1910	164.7	109.3
1911	159.0	119.7
1912	149.7	108.9
1913	148.8	108.7
1914	148.6	108.5
1915	146.7	102.2
1916	143.8	106.1
1917	147.0	102.6
1918	150.9	109.4
1919	124.9	95.2
1920	111.7	90.4
1921	94.1	78.2
1922	91.3	71.4
1923	89.6	76.1
1924	85.6	69.5
1925	82.1	64.3
1926	82.4	67.6
1927	75.3	62.5
1928	74.9	57.8
1929	71.9	56.6
1930	67.7	48.7
1931	62.0	41.4
1932	58.8	40.5
1933		38.6

The increase in 1918 was followed by an accelerated decline in both. It may be noted that this long continued decrease in tuberculosis mortality is a quite general phenomenon in all civilized countries.

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FIGURE 1

In order that future tuberculosis prevention work may rest on a sound basis, it seems wise to try to determine which groups are most and which least represented in the decline, so that energy and funds available may be directed advantageously.

Minnesota tuberculosis mortality rates specific for age and sex were calculated for eight age groups covering the period 1920-1933 inclusive. These rates are presented in Table II.

TABLE II
Minnesota Tuberculosis Mortality Rates Per 100,000 Population Specific for Age and Sex

Year	0-1	1-4	5-14	15-19	20-29	30-54	55 Plus
MALES Age Groups							
1920	88.8	29.0	13.9	38.1	142.2	130.0	126.5
1921	73.3	26.5	13.4	44.9	104.1	102.8	107.6
1922	86.3	17.2	10.9	36.5	93.7	101.4	98.5
1923	66.4	34.9	15.2	37.1	101.6	113.3	89.8
1924	62.8	32.3	14.4	36.7	94.9	93.4	107.6
1925	84.5	19.8	7.9	34.6	86.6	99.8	99.7
1926	85.2	26.1	10.6	33.5	80.6	97.4	115.9
1927	51.6	18.3	9.4	33.2	83.3	84.1	87.9
1928	47.8	25.7	7.4	31.2	72.7	86.9	98.1
1929	30.7	28.2	8.9	24.3	66.9	82.6	85.2
1930	39.8	13.7	5.8	17.2	62.0	74.5	97.1
1931	0.0	15.0	7.7	19.7	52.5	68.5	67.7
1932	22.6	15.2	4.9	13.8	41.8	63.4	77.9
1933	18.2	14.3	7.2	15.4	44.2	61.5	65.0
FEMALES							
1920	83.1	31.7	28.5	84.3	151.1	105.6	84.0
1921	58.8	23.3	18.3	87.1	137.2	108.4	78.3
1922	63.8	23.6	13.7	79.3	123.7	94.0	68.3
1923	116.1	36.8	14.0	88.4	125.3	92.9	67.8
1924	60.9	26.2	11.9	75.6	121.3	91.3	58.7
1925	39.7	15.3	12.2	62.6	113.5	71.7	55.0
1926	35.7	33.1	13.4	69.8	120.3	73.7	69.3
1927	63.2	23.0	14.1	59.0	119.6	75.9	56.8
1928	45.7	26.5	10.8	57.6	94.0	60.9	63.9
1929	55.6	17.2	9.6	47.9	107.0	63.8	75.7
1930	18.8	27.2	12.3	43.4	78.7	56.2	41.6
1931	18.0	11.1	7.9	36.5	63.6	45.9	49.7
1932	19.3	11.2	7.5	30.4	72.7	44.7	49.2
1933	34.2	12.5	5.1	25.3	61.9	46.0	46.3

By grouping the five years at the beginning and the five years at the end of the period, and comparing the rates thus obtained, a more compact illustration of rates and trends can be shown as in Figure II.

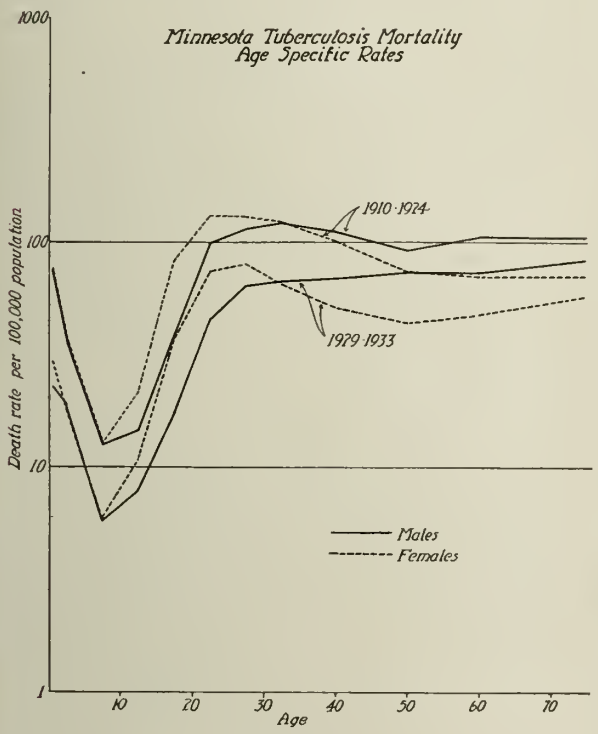


FIGURE 2

Since these rates are plotted on logarithmic paper, the decreases apparent in the various age groups represent the real relative decreases. This, however, leaves the middle years out of consideration, so the following procedure was used.

A logarithmic curve was fitted to each age group by sex, using the method of least squares. From this was obtained the logarithmic slope constant, its standard deviation, and the per cent annual decrease. These values are given in Table III. The per cent annual decrease is presented graphically in Figure III.

TABLE III

b = Logarithmic slope constant
Sigma b = Standard deviation of b

Age	b		Sigma b		% Annual Decrease	
	Males	Females	Males	Females	Males	Females
Under 1	−.0499	−.0541	.0067	.0105	10.85	9.88
1-4	−.0223	−.0286	.0068	.0081	5.00	6.37
5-14	−.0307	−.0377	.0042	.0046	6.82	8.31
15-19	−.0363	−.0400	.0042	.0033	8.02	8.79
20-29	−.0345	−.0278	.0023	.0029	7.63	6.2
30-54	−.0214	−.0313	.0040	.0019	4.79	6.95
55 plus	−.0158	−.0168	.0031	.0036	3.57	3.79

cance. The probability of a difference as great

Statistically it is found that the trend in the decreases is highly significant, although some of the apparent differences are of doubtful signifi-

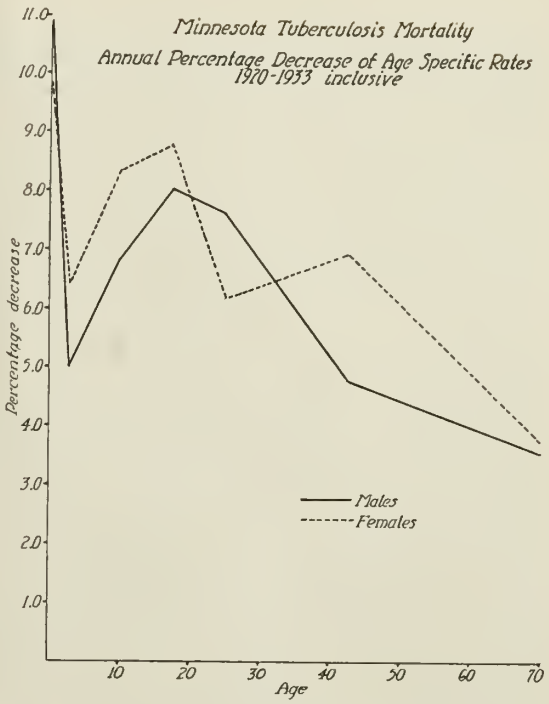


FIGURE 3

as that observed for females between the age groups 1-4, and 55 plus, is about 7 in 100. The observed difference between the same male age groups is not statistically significant.

It will be noted that the decrease for females is greater than that for males at every age except 20-29. Statistically, the probability of this unexpected reversal occurring by chance is about 2.5 in 100.

In general, we may say that the younger age groups are showing the greatest decrease in mortality rate, excepting perhaps the age group 1-4.

Acknowledgments: I am indebted to the Minnesota State Department of Health for the data from which the above rate calculations were made.

LUNG ABSCESS*

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SUPPURATION occurs in all the anatomical divisions and subdivisions of the body. The presence of a suppurating process lends hazard to life and predisposes to a shortened longevity. Suppuration is, therefore, of general interest at all times and more particularly so when any localized anatomical

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involvement is accompanied by a high mortality despite all methods of treatment. Lung abscess and pulmonary gangrene, at times difficult to distinguish, are, therefore, of especial interest.

Abscess of the lung is like abscess elsewhere in the body, for it is a localized necrosis and liquefaction resulting from infection. It differs from ordinary abscess in that it may and often does develop in diseased portions of the lung in patients who are debilitated from other causes.

Hippocrates[1] first recorded that pulmonary abscess sometimes ruptures spontaneously into a bronchus or occasionally into the pleura where it requires surgical drainage. In 1584, Shenck[1] reported a case which was cured by fomentations, and in 1696, Boglivi[1] reported recovery of a patient from lung abscess by intercostal incision and surgical drainage. During the nineteenth and twentieth centuries there appeared in the literature an increasing amount of writing relative to the treatment and etiology of pulmonary abscess. The statistics given presented a mortality of fifty per cent and often higher. It is no wonder then, that, with the more general use of the microscope, the application of the theories of bacteriology and the development of the x-ray, great interest and more frequent writings appeared in the past 75 years.

In 1866, Lyden and Joffe[1] suggested that pulmonary suppuration was caused by a variety of leptothrix which they described as a fusospirochete. At about the same time Babes, working independently, stated that if it were not a cause, then the fusospirochete was most certainly associated with some other organism in the etiology.

Murphy,[2] in 1898, reported 71 collected cases but did not class operations of the upper respiratory tract as etiological factors. In 1912, Richardson[3] pointed out the fact that lung abscess can follow tonsillectomy under general anesthesia, calling attention to the role of aspiration in the etiology of lung abscess.

Clinically and experimentally it has been found that abscess of the lung may follow different productive mechanisms. Of 2,458 cases collected by Hedblom,[4] who favors the aspiration theory, 26.7 per cent followed operation. In another series of 528 patients, 113 or 21.4 per cent followed pneumonia. Embolic abscesses secondary to pyemia, infected thrombi, thrombophlebitis, puerperal sepsis and endocarditis were found to follow in 21 cases or 3.9 per cent of 528 cases. Abscesses arising by direct extension from such sources as subphrenic, perigastric, perirenal abscesses and empyema occurred in 3 of 528 cases. Trauma[20] occasionally produces pulmonary abscess, and a small percentage of cases of suppuration of the lung follow breaking down of primary carcinoma, (lung abscess may also antedate carcinoma)[21] dermoid cyst, echinococcus cysts, actinomycosis and amoebiasis.[22] Of 528 cases, 24.6 per cent or 129 could not be traced to any definite cause, but it was suggested that many may have originated from some unrecognized aspirated material.

During the past 20 years tonsillectomy has become a more common and often less carefully done operation. Clendening,[5] in 1920, called attention to several factors predisposing to the increased importance of tonsillectomy as an etiological agent in lung abscess. Practically all of the abscesses resulting from tonsillectomy are those done under general anesthesia. The cough reflexes are abolished and infected blood, pus, and tonsil tissue fragments are aspirated during the operation. Myerson found 79 per cent of all patients immediately after tonsillectomy had blood in the trachea. Second in importance to aspiration is that group of abscesses which arise from embolism and infarction aggravated by unnecessary trauma to the tonsilar fossae. Porter[6] called attention to the importance of the arrangement of the lymphatics in the tonsil fossae and the communication with those of the lung emphasizing the necessity of great care in avoiding post-operative trauma to prevent septic infarction by metastases through the lymphatics. Additional factors are the possibility of some special infective agent and the existence of some antecedent cause overlooked by careless and incomplete physical examinations. Clendening[5] called attention to the use of motor driven apparatus for the administration of the anesthetic which forces the ether into the pharynx and with it the infected blood and pus from the tonsils.

Any doubt as to the virulence of some mouth infections is removed by the fact that four cases are recorded in which abscess or gangrene followed bites by human teeth.[7-8] In three of these, the fusiform bacilli and cocci were recovered from the lesion of the finger, and in the fourth cocci only. These findings

also suggest evidence pointing to both operative and non-operative pulmonary abscess.

Smith[9] investigated 56 cases of all kinds of pulmonary abscess and found that essentially all lesions contained two or more of the following organisms: spirochetes, fusiform bacilli, cocci, and vibrio. These are the same organisms found in 80 per cent of all people in the tonsilar crypts and around the teeth. He found also that dark field examination of washed sputum and scrapings from the teeth were identical in morphology and motility and that identification as to origin was very difficult from the slide alone.

He then attempted to produce pulmonary abscess and injected into the trachea of rabbits, guinea pigs and dogs, between the tracheal rings varying amounts of infected material from tonsils and teeth and found that in those cases that did not die from pneumonia, some of the animals developed abscess of the lung and others were immune. In those animals developing abscess, organisms were recovered similar to the post-operative and non-operative abscess in man. From these experiments it was concluded that aspirated infected material from the tonsils and teeth accounts for the greater number of cases of pulmonary abscess. Some may come from infected emboli from the upper respiratory tract.

Cutler[10] accepting the wound as the only constant factor in post-operative pulmonary abscess believes that thrombosis is always present in some degree. He was unable to produce lung abscess by aspiration or insufflation except in the presence of complete bronchial obstruction. In another series of experiments, in 90 per cent of all experimental animals in which infected emboli were implanted in a segment of a vein and ligated, pulmonary abscess did occur. He proposed that pulmonary abscess was produced by embolism and became chronic when secondarily infected by aspiration mechanism.

Allen[11] produced non-tuberculous abscess of the lung both by liberation of infected emboli in the femoral vein and by intra-bronchial injection of pus from chronic non-tuberculous abscess of the lung. In the first series, warm fresh pus was instilled into a bronchus through a catheter, and in those animals which later developed abscess it seemed that the material was trapped in the lung and usually at a great distance from the bronchus. Blowing infectious material into the lung in several animals was unsuccessful because the material was coughed up or escaped otherwise from the lung. He then injected one lobe and immediately ligated the bronchus with silk and by repeating the same procedures invariably produced pulmonary abscess, whereas in the control experiments in which ligation was done with no infected material in the bronchus no abscess was produced. The failure of the controls to develop abscess of the lung he attributed to the ability of the lungs to keep clean by cough, ciliated epithelium, wandering cells from the blood stream, and posture. Clinically no distinction could be made of the abscess as to its origin whether it be embolic or aspiratory in type.

Weidlein and Schlueter[12] concluded from their work that post-operative abscess resulted from emboli dislodged from infected thrombi. They were unable to produce abscess of the lung by insufflation of infectious material into the trachea.

Crowe and Scarff[13] deny infected emboli as a cause of pulmonary abscess following operation and point to a series of 3,500 tonsillectomies done under general anesthesia without a single case of pulmonary abscess. Experimentally they were able to produce lung abscess by plugging the bronchus with spirochete soaked pledgets of cotton from pyorrhea material, but were unable to produce an abscess when the material did not contain spirochetes.

Lambert and Weeks[14] introduced into the jugular vein clots infected with washed sputum from a case of abscess of the lung and found a discrete pulmonary abscess could be produced by employing anerobes alone in the blood clot, emphasizing that anerobes can and do give rise to pulmonary suppuration and are not merely secondary invaders. The aerobes may disappear but the anerobes remain.

Joannides[1] in a series of 87 experimental animals found that of 14 animals in which foreign bodies were surgically placed in the lung parenchyma, none developed abscess, but all developed a thick walled cyst containing serous fluid. By aspiration of pyorrhea scrapings or material from a lung abscess he was able to produce characteristic lung abscess. He also infected the paranasal sinuses of dogs with fuso-spirochete material and found some of these animals also developed pulmonary abscess of a chronic nature. From these he concluded the presence of fuso-spirochetes is important in the etiology of lung abscess, in as much as 71.4 per cent of the abscesses produced experimentally resulted from injecting fresh blood and abscess sputum.

Heuer[15] found that cultures of pulmonary abscess were predominantly anerobic organisms common in the mouth. In the simple abscess it was noted that staphlococci in clusters predomi-

nated, whereas in the abscess of rapid extension with gangrene, oral spirochetes were often more common in the advancing zones of necrosis. Between 20 and 25 per cent of all abscesses examined were found to contain flora other than that usually described. Frank[16] reports a case in which pus from the lung abscess was found to contain fusiform bacilli and spirilla.

Hedblom[4] in covering a series of 2,458 cases of pulmonary abscess found 657 followed operation and of these 360 or 54.8 per cent of post-operative pulmonary abscess followed tonsillectomy. Whittemore[17] in his series of 32 cases found 17 followed tonsillectomy; Lockwood,[18] in analyzing 54 cases at the Mayo Clinic, noted 16 were post-tonsillectomy and in another series of 208 post-tonsillectomy cases found that only seven were of those done under local anesthesia, whereas the balance were done under general anesthesia. Chipman[19] reports 33 cases, 27 of which occurred near the hilum, and therefore warrant greater care in anesthesia in patients undergoing surgery on the upper respiratory tract.

Pulmonary abscess has been found to occur two and one-half times as often in the right as in the left lung and twice as often in the lower lobes as in the upper. Eighty per cent of pulmonary abscess are peripheral and 25 per cent are multiple They may be single or multiple, large or small, acute or chronic, simple acute or gangrenous, simple chronic or chronic putrid.

Predisposing causes most frequently met with are alcoholism, diabetes, fatigue, exposure, starvation, insanity, drugs and debilitating diseases, such as typhoid and typhus fevers.

Those abscesses which result from pneumonia follow an acute inflammatory reaction with exudation and infiltration of leuckocytes at certain points affecting intra-alveolar tissue with central area necrosis, liquefaction, and cavitation. Embolic and aspiratory types result from obstruction to a bronchus with ulceration, pyogenic infection and necrosis.

Pulmonary gangrene often times difficult to differentiate even at necropsy, results from localized hypermia in certain portions of the lung, diminished circulation and the ingress of pyogenic organisms with consequent necrosis and pus formation. In the vast majority of cases of pulmonary gangrene, pleural adhesions are present in some degree.

Kline and Berger[23] believe pulmonary gangrene and pulmonary abscess to be two separate entities, stating that pulmonary gangrene contains the characteristic oral spirochetes, fusiform bacilli, and vibrios, producing the foul smelling sputum, greyish green or greyish brown, coming from ragged lesions. They believe that the sputum in the uncomplicated pulmonary abscess is usually whitish yellow, mucopurulent or purulent, having very little odor and containing pyogenic organisms usually staphlococci. Embolic abscesses are usually multiple, relatively small and associated with a suppurating process elsewhere in the body representing a pyemia or septicemia, whereas an aspiratory abscess is usually limited to one lobe, usually the lower, and is usually associated with some degree of pneumonia and not a septicemia or pyemia. In the aspiratory type there is no odor and smears reveal the presence of staphlococci in all. Their investigations revealed abscess to be more common in children, and gangrene more common in adults. Both abscess and gangrene are more commonly found in the lower lobes.

The fusiform bacillus is an anaerobe, nonmotile, straight, spindle shaped and pointed at the ends. It is somewhat variable with Gram's staining, from 3-10 microns long and 1.4 microns thick. The vibrii is a motile aerobe curved and gram negative 2-5 microns long and .5 micron thick. The spirochetes range from 4-15 microns in length with 2-20 irregular coils and in smears are Gram negative. All of these organisms are found in the mouths of healthy individuals.[24]

The symptoms of lung abscess are not constant due to the various causes and modes of infection. Most patients have chills in some degree, some very severe, accompanied by a septic temperature ranging to 103 degrees and 105 degrees. Night sweats are very marked and are present in a majority of patients. Early in the course of the disease there may be no cough or a very slight, dry, hacking cough, persisting without many physical findings until an abscess ruptures into a bronchus, when the cough becomes productive and the patient raises large quantities of sputum which may be very foul smelling, or has a slightly sweetish odor and at times is tinged with blood. The foul odor has been attributed to gangrene of the lung, whereas the yellowish and less obnoxious sputum has been associated with abscess and bronchiectasis. Weight loss is usually rapid and is accompanied by a very marked anemia early in the disease. Hemorrhages from lung abscess occur in about 30 per cent of the cases and at times may be very severe and occasionally fatal. Gangrene with the more rapid and extensive necrosis is more often productive of blood streaked sputum. There is an early clubbing of the fingers, often marked within the first three to four months after the onset of symptoms.

The physical findings are extremely variable because of the constantly changing physical conditions in the lung in which the abscess is found. In the early stages there may be slight dullness if the abscess is peripheral or is accompanied by some of the pathological changes of early pneumonia. After cavitation is present the physical signs change with the contents and degree of filling of the cavity, often varying in the course of a few hours if the cavity should suddenly be emptied. In gangrene of the lungs, frequently the only findings are those of discrete moist rales. The X-ray is pathognomic of the lung abscess and even more so if a fluid level is found in the abscess cavity.

In the differential diagnosis it becomes necessary from the standpoint of treatment to distinguish pulmonary tuberculosis, bronchiectasis and gangrene from pulmonary abscess. The nontuberculous abscess usually follows an acute condition such as pneumonia, with streptococcus or staphlococcus infections, or it follows an operation on the teeth, tonsils, or paranasal sinuses, or the aspiration of a foreign body, and it is most always of such an acute nature as to be followed in a few days by expectoration of a foul smelling character accompanied by periodical rises in temperature. Oftentimes there is blood-streaked sputum, and in a few weeks clubbing of the fingers becomes marked. During the influenza epidemic there was a marked increase in the incidence of pulmonary abscess occurring with greatest frequency in the lower half of the right lung in areas fibrotic from previous infection.[25]

Bronchiectasis usually follows pneumonia in childhood or some other infection which begins as a bronchitis and gradually becomes chronic. These patients run an occasional temperature, may raise bloody sputum at times and have a productive cough which is always loose. The fingers are moderately clubbed.

In pulmonary tuberculosis cavitation occurs only after the disease has been present for some time. The presence of the tubercle bacilli makes positive the diagnosis.

Repeated attacks simulating bronchitis are common in the tuberculous patient and in those suffering from bronchiectasis whereas abscess of the lung is more apt to be of sudden onset in an apparently healthy individual. Occasionally there may be some confusion with the acute signs of an abscess and pneumonia.

Pulmonary abscess is caused by microorganisms of acute infectious processes and by aspiration of infected material. The aspirated material follows the direction of the greatest air currents and becomes lodged in the lower lobes. Bronchiectasis is a disease of the bronchi in which dilatation and distortion occur, marked by fibrosis and contraction of pulmonary tissue near the hilus, and when these changes are advanced all parts of the lung are affected. Tubercle bacilli are not commonly found in the air passages, but probably gain entrance through the lymphatics and are carried to the lung tissue usually to be deposited in the apices where mobility is less and conditions for growth better. Generally speaking, pulmonary tuberculosis is a disease of apices, bronchiectasis, a disease of the hilus, and pulmonary abscess a disease of the bases of the lung.[25] Chronic infectious diseases with resulting tissue reactions in the lungs are the foundation for the presence of many valuable physical signs in tuberculosis which are absent in the acute conditions of pulmonary abscess.

Whittemore[26] warns that the diagnosis of lung abscess may be most difficult at times. It is most important that definite location of the abscess be made prior to operation, more especially in those cases which come on three to six months following some other lung condition.

In making an accurate diagnosis, the history is most important in order to determine, if possible, the cause of the abscess, whether it be embolic, aspiratory, traumatic or otherwise. Repeated sputum examinations should always be made, for a single negative is of no significance. Elastic fibres so frequently described as pathognomic are actually found in less than one-third of all cases.[27] If large numbers of influenza bacilli are found, the diagnosis of bronchiectasis is indicated. X-rays should always be taken in several positions. In those cases which follow pneumonia, if no fluid level is present, it is necessary to rule out an unresolved pneumonia. Physical examination is of least importance in determining the extent and exact location of the local process unless it is very far advanced and accompanied by the bizarre manifestations of far-advanced lung pathology.

Complications in lung abscess vary with the etiology and may be more grave than the disease itself. Pleural adhesions are usually present; localized bronchiectasis may surround the abscess; arthritis, endocarditis, mediastinitis, brain abscess, diarrhea, gangrene, or fatal hemorrhages may occur.

Treatment of pulmonary abscess requires accurate knowledge of the lesion and the patient. Statistics are variable, but most agree that the mortality is very high. Lockwood,[27] reviewing 1,117 cases of lung abscess, found 58.6 per cent mortality under medical regimen and 35 per cent

mortality under surgical treatment. Hedblom[28] reporting sixteen cases, all operated, gives a mortality of 18.7 per cent, or three deaths. Miller and Lambert,[29] in 1926, reported 40 cases, 20 treated medically with recovery and 20 treated surgically with four deaths, a mortality of 20 per cent. Graham and Singer[30] had six deaths in 13 cases with a mortality of 46 per cent. From such high surgical mortalities it is to be remembered that many of these cases were chronic, and the interval between onset and treatment was unduly long.

Preventive measures if applicable to tonsillectomy alone will materially improve the incidence of pulmonary abscess. Proper anesthetic is most essential, for it has been found that abolishing the cough reflex and the failure to expel the aspirated material is equally if not more important than the fact that the material was aspirated. Mouth hygiene prior to operation is to be more generally encouraged. Proper preparation of the patient, often neglected, must be done and should include a complete and careful physical examination to eliminate the most common predisposing factors. Surgical technique permitting only the gentlest care in the operative and post-operative procedures in the throat is acceptable.

After the abscess has occurred, some systematic method of treatment should be instituted, consisting in the main of absolute rest and postural drainage with supportive and symptomatic measures. Under such a procedure approximately 50 per cent of all cases will recover. Lockwood,[27] Graham and Singer,[30] Miller and Lambert,[29] Harrington,[31] Lilienthal,[32] Hedblom,[28] Spector[33] and others are in agreement advocating that all pulmonary abscesses are primarily medical and remain so, as long as there is evidence of retrogression in the pulmonary findings as evidenced by frequent X-ray examinations and improvement in the patient's general condition. The remaining 50 per cent will be found to require surgical treatment.

In those cases associated with gangrene, arsephenamine preparations have been used with encouraging results as reported by Curschman[34] and Kline.[24]

Lung abscess following aspiration of foreign bodies or the aspiration of infected material from upper respiratory surgery is at times dramatically cured by removing the foreign body and facilitating drainage through the bronchoscope as advised by Hedblom.[28] [39] Moersch,[35] Daly,[36] Harriman and Welker,[37] and Lynch[38] in similar language believe bronchoscopic aspiration to be the safest procedure in the treatment of lung abscess due to foreign bodies or in those cases in which the abscess is connecting with a bronchus, and that surgery should be done only when bronchoscopic treatment has failed and then in conjunction with bronchoscopy.

Serum therapy has been tried in a small group of cases and some improvement has been noted by Moore and Lowe[40] who believe their results warrant further trial at this time. One case of pneumococcus abscess is reported to have responded to serum therapy.[41]

In certain types of pulmonary abscess, more particularly the acute abscess, diagnosed before the development of pleural adhesions, artificial pneumothorax has been done with success. Tewksbury[42] comparing a small series under medical treatment alone finds a considerable reduction in the mortality in a similar series with the use of artificial pneumothorax. He also noted that all cases treated in less than two weeks after the onset of the disease recovered. Geer,[43] Pratten and Fallis,[44] and Solomon[45] report cures with artificial pneumothorax, and Mazza[46] reports a case of gangrene which responded to this type of treatment.

In those cases in which a definite etiology has not been determined, Brule and Heilemand[47] suggest emetin therapy for its value in amoebiasis.

Where other measures have failed, there remain a large percentage of cases of lung abscess which are not progressing favorably under medical supervision and other less hazardous procedures. In those cases which are draining poorly, and in those cases of multiple abscesses which involve a single lobe, surgery may be indicated. Needling an abscess of the lung is mentioned only to be condemned unless it be at the time and as a part of operative procedures. Exploratory needling, by withdrawing infected material into the pleura, might convert a simple abscess into one with many complications, some of which may be fatal, such as an extensive empyema.

The principles in the treatment of suppuration of the lung are the same as those for the treatment of suppuration elsewhere, namely, those of adequate and continued drainage until repair is complete. The particular surgical procedure to be followed is dependent upon many pathological and anatomical factors as well as the clinical picture of the patient. It would be ideal if drainage could be established before any communication with a bronchus existed. Unfortunately, most of the cases that come to surgery are chronic and require extensive surgery more particularly two-stage operations, peripheral lung fixation and regional thoracoplasty,[48] lobectomy, partial

pneumonectomy, or collapse by extra pleural resection of the ribs.

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MEDICAL LEADERSHIP IN HEALTH EDUCATION*

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WE CHALLENGE America to show wherein the medical profession has ever failed to meet unselfishly the problem of alleviating suffering and prolonging the life and happiness of the human race.

We challenge America to show wherein its history the medical profession has ever failed to apply itself to a continuous scientific study and program of research for the guidance and control of its procedure.

We challenge America to show wherein the medical profession has ever been other than a dynamic profession always in a state of change, prepared to meet the demands of scientific advance and social change.

An appreciative society will surely not resent our pride in the alertness of our profession to meet the social and scientific changes from the days of the saddle bags to the X-ray and modern laboratory.

Recently in American social and civic life, there has evolved the fulfillment of the dream of the past generations of our brother physicians, a social and civic philosophy of life developing from the sum total of the daily activities for the past several decades of physicians in every hamlet, crossroad village and city throughout the length and breadth of our nation. We had the physician astride his horse or jogging in his cart to care for the ills of those who could have no appreciation of a sensible diet, muttering and

*Inaugural address of the president of the American Association of School Physicians held at Saratoga Springs, N. Y., June, 1934.

dreaming of the time when preparation for citizenship would include the knowledge and habits of proper eating. There was the old physician scolding and fussing in the midst of his endeavor to minister to the rachitic child about the necessity of sensible daily habits of living. Each community had its physician storming and sometimes swearing while trying to patch up the bodies of his patients who have violated all of the laws of rest and exercise because the schools and society had never given an appreciation for such laws. Throughout the nation were the physicians raging in public and at the bedside about their patients with damaged hearts and kidneys due to the neglect of defective teeth and tonsils.

The individual and collective activity and influence of these physicians was the scientific and social lever in each community that recently forced the educational philosophy that the school is just as responsible for the physical welfare and the physical development of the child as it is for his mental attainments.

True to its history of meeting social and scientific changes, almost immediately the medical profession supplied specially trained physicians to administer and direct the health service and health education in our public schools. In our national educational activities we find physicians who have already made national reputations for themselves in every division of this new specialty of medicine.

Not only did the medical profession immediately supply the trained physicians for school health work, but in the short space of eight years it developed one of the largest national medical associations in America to direct the scientific study and evaluate research for the medical control and administration of health service and health education in our schools.

We now serve notice on America that this division of the medical profession, the American Association of School Physicians, will always be found demanding, asserting and assuming scientific medical control of this new specialty of medicine to the same extent that the medical profession has always given its service to every problem relative to the health and medical welfare of the human race.

This responsibility of the medical profession through the leadership of the American Association of School Physicians is quite challenging. However, it is not more difficult than the many other problems in human welfare that the profession has successfully met.

In order to make more efficient the leadership of the Association in the medical control and administration of school health service and school health education, the Association has recently reorganized the scientific and educational working body of the organization. Groups of physicians throughout America and Canada are organized into committees for research, and the scientific and educational evaluation of material relative to school health work. These committees are headed by physicians with national reputations and cover every phase of school health activities.

The protection and promotion of the health and physical fitness of a nation is an obligation and a duty that the leadership of the medical profession always assumed. The past few years have seen quite a change in our objectives in education. From the kindergarten through the university, health and physical fitness is now considered to be one of the chief objectives of education in its preparation for happy, efficient citizenship. Modern educational thought considers that it is just as much the duty of the school to develop the health and physical fitness of the student as it is to promote his mental attainments. Thus the future of the race in physical happiness and healthful living depends in a great measure upon the scientific efficiency and soundness of the school health service and health education. In this new and untried experiment in protecting and promoting the health of a nation, the medical profession dare not shirk the responsibility of its guidance and direction.

The history and heritage of the medical profession in education is second to none. Its wealth of centuries of experience in the care of the human body; its accumulation of medical scientific literature; its wealth of medical schools with the most rigid standards known in education; its reputation in keeping pace with scientific advance in all of the basic human sciences; its experience in and scientific knowledge of the origin, growth, development and nurture of human life and the natural laws which affect it; this heritage and these resources make it just as mandatory that health education be a specialty of the medical profession as it is that surgery or obstetrics be a specialty of medicine.

During the past few years the school physicians, widely separated and scattered throughout the country, have been the pioneers in this new social duty of the profession. In most instances it has been an individual struggle to coordinate scientific medical leadership with the old established organization of education. In many cases it has been a tireless, individual effort on the part of these pioneers to convince educational administrators of the importance and need of a sound, scientific

organization of the health service. In many systems it has meant diplomatic maneuvering to keep the best trained and best prepared man of the system, the school physician, from being relegated by the school executives to the mere routine of physical examinations at a meager salary without authority or administrative voice in the broader and more important functions of school health work. In all cases it meant mainly individual work with individual ideas without any great amount of help from the medical profession except those quite valuable contacts made through the mixed sections of the American Public Health Association. These pioneers, however, gave a good account of their leadership and seven years ago the American Association of School Physicians was organized to make possible the help, the power and the strength of collective, national medical leadership in school health work.

ALLEGED SACRO-ILIAC STRAINS*

L. J. Stauffer, M.D.
PRIEST RIVER, IDAHO

MY IDEA in presenting this paper is to advance the idea that the so-called industrial accidents, sacro-iliac strain and lumbo-sacral strain are not accidents within the meaning of the workmen's compensation acts.

After seeing some of these cases over a period of years, all of whom claim an industrial accident and compensation, I have come to the conclusion that these cases should not be reported as injuries. There is one pathological cause at the bottom of all of them and that is an arthritis, which is chronic in nature. Possibly the condition was aggravated a little by some slip or strain, but if in my opinion a normal joint would have stood the strain without incapacity for work, then I do not believe an injury was sustained within the meaning of our workmen's compensation acts.

Bearing out this idea, I will quote a hernia decision from the Georgia courts.

Quote:

Workmen's Compensation Act. Hernia due to ordinary work, not due to accident. An act done by an employee in the ordinary performance of the duties for which he is employed, when done in a manner not unusual or unexpected, but in the manner ordinarily required and expected of him in the performance of his duties, does not constitute an injury or accident. A hernia resulting to the employee from the performance of such act does not result from an injury or accident.

Westbrook *v.* Highview, Inc. (Ga.), 157 S.E. 362. *Unquote.*

The decision just quoted was, of course, made in reference to hernia, but the same principle will apply to our alleged industrial accident of sacro-iliac strain.

But we have court decisions that are exactly the opposite and I will now quote one of these. This one is from the Oklahoma courts.

Quote:

Workmen's Compensation Acts. Aggravation of pre-existing arthritis by accident compensable. The fact that an employee is suffering from a diseased condition does not necessarily bar him from the right to compensation in case of injury and disability. An award may be had for disability caused by an injury arising out of and in course of employment, if the injury aggravates an existing disease. The award in favor of the workman whose arthritis was aggravated by accidental trauma was accordingly affirmed.

Oklahoma Gas and Electric Company *v.* Slocum (Okla.), 15 P. (2nd) 29. *Unquote.*

Next, I have a decision from the Louisiana courts.

Quote:

Workmen's Compensation Acts. Complications following industrial accident compensable. The Plaintiff, in the course of his employment, strained a sacro-iliac joint. Infection followed this strain and complications arose in the sacro-iliac region, prolonging the disease and aggravating the plaintiff's condition. Ten physicians who testified concurred in the opinion that the plaintiff's condition was worse because he had not received proper treatment immediately after the accident. That a strain in the sacro-iliac joint usually should be cured in a month or two, if properly treated and the patient made to rest, and that the plaintiff's condition at the time of the trial was such that he could not perform manual labor.

On the behalf of the defendant it was contended that the evidence did not establish that the injury to the plaintiff was the result of an accident occurring out of and in course of his employment. We are of the opinion,

*Presented at the annual meeting of the Great Northern Railway Surgeons' Association, Glacier Park, Mont., July 1, 1935.

said the Court of Appeal of Louisiana, that the evidence does establish with legal certainity that the plaintiff's condition is traceable to strain sustained by him in the course of his employment.

It is probably true that his continued disability has been contributed to by disease independent of, or possibly connected with, the original injury, causing prolongation of the ailment and slowness of recovery.

However, even if that is true, the right to recover compensation will not be unfavorably affected thereby. It is not necessary, in order to recover under the Employer's Liability Act of Louisiana, that the continued disability resulted directly from the injury. It is sufficient if the disability is the result of a condition arising from the injury, or that the injury is a contributing cause of the disability.

Anderson *v.* Louisiana Oil Refining Corporation. La. 134, So. 343. *Unquote.*

The last two decisions leave a condition through which the malingerer can obtain some very easy money. All he has to do is to get a job which entails a little lifting, and some day, with witnesses present, complain of a sudden pain in his back; go to the timekeeper and report that he has strained his back while lifting, and then give the same story to the doctor. If the doctor reports that the man has sustained a sacro-iliac strain, it is just too bad for the insurance-carrier. The claimant may claim compensation for most any length of time he chooses and the average Industrial Accident Board will sustain his claim.

Most of the men who have these alleged accidents are men of about fifty years of age with a chronic arthritic condition of the sacro-iliac joints and vertebrae.

When we examine their mouths, we are likely to find a lot of old toggled-up bridge work, hooked onto dead teeth which have root abscesses; and very often the tonsils are chronically diseased.

X-ray examination will show a chronic arthritic condition of the sacro-iliac joints, and the anterior parts of the vertebrae will show the characteristic "lipping."

When these cases come in, I inform them that they have an illness and not an injury within the meaning of the compensation acts.

I will now cite a few typical cases which I saw last summer. Case 1. Man, age 60. Cook. He has just come on the job after a prolonged idle period. He is a pale, anemic individual and is a fit subject for an old age pension.

The history of his alleged industrial accident is this: "Yesterday, I had got a pail of water from the creek, and had started up the bank and slipped, and my back hurt me, and it has kept getting worse."

Physical examination reveals a tenderness over the left sacro-iliac joint. I do not consider that this man sustained an industrial accident, but if some accommodating doctor would report him as having sustained a sacro-iliac strain, he would be able to draw compensation indefinitely.

Case 2. This man is but thirty one years of age. His history is this:

"I was loading a scraper, and the pain in my back gradually came on this afternoon, and has been getting worse right along."

Diagnosis. Right-sided chronic sacro-iliac arthritis, aggravated by occupation. He has diseased tonsils, and has been having an attack of acute tonsillitis at least once per year.

Case 3. Man, age 39. History: "I was pulling on a gooseberry bush and the bush broke, and I spun around and sat down pretty hard, and a pain ran down my right thigh."

Diagnosis, sacro-iliac arthritis.

Case 4. Man, age 37. "I was lifting on a piece of stump, and the ground was slippery, and my feet went out from under me, and I sat down hard, and immediately had a pain in my back, and could not get up without help." Diagnosis: Myositis of lumbar muscles. An ordinary lumbago.

Case 5. This patient is but eighteen years of age. History: soreness in his back has been coming on gradually for the past eighteen days, and has become so bad he could no longer work at his regular occupation of pulling gooseberry bushes.

Diagnosis: Chronic fibrositis of the fibers of the right lumbar muscles at their attachment to the crest of the ilium. He has a sub-acute appendicitis.

Case 6. At one time before I had a decided opinion on this subject, and in order to give the patient the benefit of the doubt in my mind, I reported a patient as having a sacro-iliac strain. History: man, age 46.

"I was lifting on a log and strained my back. I felt a sudden pain in my back and had to almost go to my knees."

I treated him for three days and he returned to work. After four days of employment the

camp where he was working closed down, and he was out of employment. He then returned to me and demanded more treatment for his alleged injury. It was very plain to me that he did not want treatment for the sake of the treatment, but as a claim for continued compensation, and I gave him no further treatment.

Nine months later I was summoned to industrial court, since my former patient was claiming nine months' continued disability, which was up to that date.

This case was very similar to the court decisions I have quoted. The defendant insurance-carrier argued that, even assuming that the strain did aggravate the plainly-existing arthritis, the disability therefrom would not last longer than six weeks.

The Industrial Accident Board gave the patient an award of four months disability in the sum of one hundred and seventy-five dollars. The patient's attorney merely brought out the fact that I had reported a sacro-iliac strain, and his work was done.

My experience with these cases has brought me to the opinion that the so-called injuries, sacro-iliac strain, sacro-iliac "slip" and lumbo-sacral strain are not industrial accidents.

BOOK NOTICE

A SHORT RÉSUMÉ OF RADIUM THERAPY

The Radium Treatment of Skin Diseases, New Growths, Diseases of the Eyes, and Tonsils, by FRANCIS H. WILLIAMS, S.B., M.D.; first edition, grey cloth, gold-stamped, 111 pages plus bibliography and index, 12 illustrations and frontispiece; Boston: The Stratford Company: 1935. Price, $2.00.

This little book is the sobered reflections of a specialist who has spent thirty years in radium therapy. Dr. Williams, who is senior physician to the Boston City Hospital, has written in no sense a textbook; rather, it is a cross-section of his own experiences in medical practice, presented with several case reports in support of particular points which he wishes to stress. He has devised his own instruments (for the most part) for radium application, and some of the plates illustrate these instruments. It is interesting to note that Dr. Williams in certain treatments dealing with the eyes and mouth or ears, seats the patient in an ordinary Morris chair, devised by the famed English poet and typographer, William Morris, who also produced the Golden type-face which was used in the Kelmscott *Chaucer*.

AN AUSTRIAN SURGEON AT THE RUSSIAN FRONT

Around a World on Fire: Exploits and Escapes of an Austrian World War Surgeon, by KARL ERHARD KASSOWITZ, M.D.; first edition, cloth, stamped in black, 198 pages with illustrations by HANS von SCHRÖTTER, Milwaukee: The Gutenberg Publishing Company: 1935. Price, $2.00.

Karl Erhard Kassowitz was graduated from the Faculty of Medicine of the University of Vienna in 1910. Four years later he was assigned to duty on the Eastern front, in the territory later signalized by Hindenburg's stupendous victory at Tannenburg. Before that Prussian triumph, however, Kassowitz was taken prisoner by the Russians and brought under duress to Russia. His escapes from there, and his rather amazing flight across Asia to freedom constitute the major portion of the book.

The volume itself is little concerned with military medicine *per se*. Crisply-written, couched in vivid phrase and expletive, it is a surgeon's adventures, rather than a surgeon's case history. As such, it is highly interesting and is certainly entertaining. Physically, the book is wanting. It is set in Garamont, but the wisdom of setting the title-page in Cheltenham bold in the form of a two-page spread is debatable. Otherwise, the volume is pleasing enough. Dr. Kassowitz is at present associate clinical professor of pediatrics in the Marquette University School of Medicine in Milwaukee.

A RÉSUMÉ OF LITERATURE ON COLITIS

The Management of Colitis, by J. ARNOLD BARGEN, M.D., F.A.C.P.; first edition, 216 pages plus table and index and bibliography; red cloth, gold-stamped, illustrated; New York: The National Medical Book Company-Doubleday, Doran & Company, Inc.: 1935. Price, $3.00.

Colitis as a term is a misnomer. It is a diagnostic platitude which the incompetent and unlearned physician can snatch up and brandish without fear of aggression. As an abdominal condition, however, it can become, as the author declares of chronic ulcerative colitis, "one of the most serious, dreaded, and disabling conditions that afflicts the human being."

Thus, this new small résumé of the literature by Dr. Bargen, who is a member of the Division of Medicine of the Mayo Clinic at Rochester, Minnesota, is doubly-welcome. The book is in the main a survey of literature and specific cases of note that have been encountered at the Mayo Clinic, but the bibliography attests that Dr. Bargen has freely consulted other sources. Inasmuch as a very considerable amount of new and accurate data on this particular gastro-enterological condition has been assembled within the past few years, this little volume is a highly valuable reference guide for all considerations of colitis. The illustrations, coming entirely from the Mayo Clinic, are exceptionally fine and clear. The book was edited by Morris Fishbein, M.D., editor of *The Journal of the American Medical Association*.

The
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DECLINING YEARS AND STATUS QUO

It is frequently said that the physician cannot keep an open mind or keep abreast of the times as he reaches advancing years. This statement probably is based upon the fact that the physician's work causes him to become an individualist and also because there are striking examples of physicians who in advancing years, have looked upon themselves as authorities and to whom all innovations appear as questioning of that authority.

Perhaps there is no better example in the literature than that of Virchow, who made extremely valuable contributions in the early years of his career. During this time he argued strongly against infallibility with regard to knowledge and judgment being the sole possession of any one man. Nevertheless, his contributions became so widely accepted that physicians everywhere looked upon him as an authority. Unfortunately, as years advanced, he accepted this authority and practically considered himself infallible. Apparently, his mind closed to evidence of new facts, both oral and written, and he coasted on through life on his laurels. He was so powerful, because of his previous contributions and the high esteem with which he was held in the minds of the medical profession, that he was in a position to seriously obstruct all advances in medicine, which he did with much success. For example, he opposed Darwin; he did not support Charcot; he offered considerable opposition to the views of Behring and Koch concerning toxins and antitoxins. It was he who refused to accept Koch's discovery of the tubercle bacillus and, therefore, would not permit the original paper to be presented before the appropriate group. Virchow allowed puerperal fever to be explained in terms of atmospheric and and cosmic influences, when Semmelweis had an adequate explanation. Although he did not attack Semmelweis, he used the more subtle method of ignoring Semmelweis' views while teaching the conflicting theories of the day. Semmelweis was very sensitive about Virchow's attitude and it was at least in part responsible for his insanity and suicide. Virchow and others like him are not today held in the same great respect that they would have been, had their attitude toward progress been different during the declining years of life.

While one might cite a number of physicians similar to Virchow, one could also cite an equal number who retained open minds in advancing years. Practically all of us at the present time know one or more elderly physicians whose minds have not stagnated with age and who are not egotistical because of their long years of experience. In the medical profession, the elderly physician who has forgotten his laurels, whose mind is just as open, and whose interest in all phases of medical progress is as keen as it was in young

manhood is not only greatly respected but stimulates and inspires his younger colleagues. Such an attitude of mind must certainly make the declining years of life pleasant. J. A. M.

BIRTH CONTROL

The question of whether or not we shall have birth control is no longer open; it has been settled by the public. Birth control is here and this can be easily proved. In Minneapolis the birth rate in 1924 was 23.3; in 1934 it was 14.9 (figures taken from the Annual Summary of Activities of the Division of Public Health for 1934). A similar condition prevails elsewhere, as set forth in a paper entitled "Causes of the Decline in Birth Rates" by P. K. Whelpton, published in the July, 1935, issue of The Milbank Memorial Fund Quarterly.

It is not reasonable to assume that there has been any sudden biologic change to account for this. The women of the United States have not become relatively more infecund in recent years nor is there any reason to suspect any increase in the degree of abstinence practiced. Neither can we credit that famous will-o'-the-wisp known as "Rhythm" with having anything to do with it. Obviously the only factors worth consideration in accounting for this sharp decline in the birth rate are contraceptive measures of the various types, and abortions.

Due to the opposition to discussion of this subject in professional circles, most of the control of birth control measures has passed out of legitimate medical channels. Contraceptive appliances and drugs and abortefacient drugs and instruments can now be as easily purchased in drug and department stores as aspirin or pocket handkerchiefs, and they are openly displayed for sale in windows and show cases.

In a serious attempt to gain control of this situation the American Birth Control League, with its subsidiary state and local branches, has enlisted the co-operation of lay people of recognized standing and interested physicians throughout the country. The lay people who are lending their strength to this movement feel that the handling of this problem in all its ramifications belongs strictly to the medical profession, and when sufficient recognition has been given to it by the larger medical organizations and their component members so that the work can be carried on by them alone and be thereby a part of public health activities and preventive medicine these lay people will withdraw from the picture except insofar as they may aid organized medicine in regard to any legislation it proposes or in regard to well considered education.

No fairminded person can object to this, nor to the propagation of any information which will lead to a closer understanding of the fundamental truths involved. The important article by Dr. Sophia Kleegman in this issue should be read by everyone. It is being published because it conveys in clear and rational language the salient points on which this whole argument is based. It is offered in the hope that it will have a very far-reaching effect in bringing home to the medical profession it reaches a sense of its responsibility.

G. C.

HAVE YOU TRIED EXERCISE?

Exercise is a great therapeutic agent. The hard working farmer seldom has the jitters nor does he toss in bed at night a victim of insomnia. There's something about the exercise he gets that takes all that away. At the end of a day of physical exertion, he hangs the scythe in the crotch of a tree, draws water from a well and enjoys that delightful rite of ablution which is the vouchsafed reward of all those who earn their bread by the sweat of the brow. After a simple, wholesome supper, he finds a seat on the porch. Tired? Yes, so tired that the whole body aches, but it is an ache that feels good. He is relaxed and at peace with the world.

The golf links furnish a counterpart to this picture—with the frequently complicating factor of artificial stimulation at the finish which accounts for the spurt of hilarity that so often precedes the heavenly calm. In either case, the sequel is the same. After the showers and the clean linen, there's a lazy indifference to everything that was so irritatingly urgent before. Nothing matters now. Nothing of importance—except perhaps the tell-tale marks that have been registered on the thenar eminences to denote proper or improper grip. Some trifle must be changed, of course.

Rest and normal sleep can scarcely be expected by those who do not seek them at the source that nature has provided for the deserving. Exercise merits a place among our favorite prescriptions. Morpheus is more easily reached by those who have worshipped at the shrine of Vulcan.

A. E. H.

NEWS ITEMS

Dr. Wm. W. King, Milnor, N. D., passed away on October 4, after being in active practice for over 35 years.

Dr. T. S. Soine, formerly of Barnesville, has moved to Dallas, Minn., where he will continue general practice.

Dr. A. B. Halliday, formerly of Hankinson, has recently moved to Herron, N. D., where he will continue general practice.

Dr. F. M. Knierim, Chicago, has moved to Glasgow, Mont., where he will continue his special practice in eye, ear and throat.

Dr. Robert C. Ray, formerly of Forman, N. D., is now located at Heron Lake, Minn., where he is associated with Dr. A. G. Chadbourn.

Nearly all of the leading hospitals of Minnesota, both Dakota's and Montana, have been approved by the American College of Surgeons.

Dr. Raymond Davis, a graduate of the Minnesota Medical School in 1933, has recently opened offices for general practice at Clearbrook, Minn.

Dr. J. P. Bartle, who has been in practice for a short time at Portal, N. D., has moved to Dunseith. This now leaves Portal without a doctor.

Dr. Walter P. Gardner, resident physician of the Hastings asylum, has been appointed assistant superintendent of the insane asylum at Fergus Falls, Minn.

Dr. J. T. Schlesselman, who has always been active in civil affairs, has been elected president of the Mankato, Minn., Chamber of Commerce of that city.

Dr. J. A. Myers, Minneapolis, was a guest speaker at the monthly meeting of the members of the Midwest Clinical Society in Omaha, October 28.

Dr. Eugene H. Pool, New York City, was elected president of the American College of Surgeons, at its annual meeting recently held in San Francisco.

Dr. S. R. Lee, head of the state asylum at Willmar, has been named superintendent of the Ancker hospital, St. Paul, and will assume the post December 1.

Dr. Stanley J. Seegar, Milwaukee, was elected president of the Alumni association of the Mayo Foundation, at its annual meeting held at Rochester last month.

Dr. Donald O. Balfour, Rochester, Minn., was installed as president of the American College of Surgeons, at the annual meeting recently held at San Francisco.

Dr. O. S. Leedahl, Stanley, N. D., who has been in active practice in that city for many years, passed away on October 28, after an illness of several months.

Two additions are being constructed on the Raiter hospital at Cloquet, Minn., and when completed, will be one of the modern hospitals in that section of the state.

Dr. Wm. A. O'Brien, Minneapolis, was the principal speaker at the October meeting of the Faribault Chamber of Commerce, his subject being, "After Forty, What."

Dr. M. W. Kemp, of the Fergus Falls State asylum, has been appointed superintendent of the state hospital at Anoka, to succeed the late Dr. A. C. Caine, who died recently.

Drs. McCannel, Cameron and Breslich, Minot, N. D., were among the members who attended the annual meeting of the American College of Surgeons recently held in San Francisco.

Dr. H. E. Jenkinson, physician of Wessington Springs, S. D., was awarded the prize of being the most popular and distinguished person for extending good will service to that community.

Many of the leading hospitals of Montana have extended the use of free beds to the hospitals of Helena, serving them until they fully recover from the recent earthquakes in that city.

Theodore R. Fritsche has joined his brothers Dr. Albert and Dr. Carl Fritsche in the clinic established by their father, the late Dr. A. L. Fritsche, at New Ulm, Minn., some 15 years ago.

At the October meeting of the Nicollet-LeSueur Counties Medical Society held at St. Peter, Minn., Drs. A. E. Bratrud, Minneapolis, and A. V. Denman, Mankato, were the guest speakers.

Dr. and Mrs. H. R. Hennesy, Fall Brook, Calif., make the announcement of the arrival of "Baby Irene" weighing 7½ pounds. Dr. Hennesy was a graduate of the University of Minnesota in 1930.

At the annual meeting of the North Central branch of the American Urological association

held at Rochester this month, Dr. P. G. Smith, Cincinnati, was elected president, and Dr. W. G. King, Des Moines, secretary.

Dr. Paul W. Sweet, a former fellow in the Mayo Foundation, died at Centralia, Wash., on October 22, the result of a sudden heart attack. Dr. Sweet was 55 years of age and a graduate of the Jefferson Medical School.

Dr. D. E. Seashore, who has been prominent among the Duluth physicians during the past 20 years, died suddenly on November 5 from a heart attack. The doctor was a graduate of the University of Minnesota Medical School.

Litigation has been started to prevent the new $2,000,000 hospital being located at Moose Lake, Minn. An order from the courts may be the cause of legal proceedings, that will enjoin them from any erection of the hospital for months or years.

Dr. A. A. Flaten, Edinburg, N.D., celebrated his 71st birthday recently when a large family gathering and friends of the doctor met at his home to extend congratulations, for he has won the esteem and gratitude of a large circle of friends.

A three days meeting of the north central branch of the American Urological Association was held at Rochester, Minn., on October 31. Dr. W. F. Braasch, was in charge of the program, with many national speakers present at each session.

Dr. G. E. Page, Elk River, Minn., died at the Memorial stadium, Minneapolis, where with his two sons he was attending the Minnesota-Purdue football game the result of a sudden heart attack. Dr. Page was 61 years of age and a graduate of the University of Minnesota.

Drs. G. A. Carmichael, Butte; E. N. Jones, Wolf Point; C. E. Nagle, Crow; J. H. Rieniets, Missoula, and A. L. Wiesgerber, Great Falls, Mont., were honored by being elected members of the American College of Surgeons at the recent annual meeting held in San Francisco.

Vermilion, S. D., will dedicate its new hospital that has recently been completely refurnished at a cost of $125,000, in the near future. The building is an attractive three-story structure of brick and steel construction, modern and strictly fireproof in every way, and has a capacity of about 50 beds.

Dr. Geo. A. Durnin, one of the leading physicians and surgeons of Bottineau, N. D., passed away on October 25, after an illness of several months of suffering from high blood pressure. Dr. Durnin, was 59 years of age and had always taken an active part in medical and civic activities.

Under the name of Hyman Ginsberg, alias Dr. Robert Clark, alias Dr. Hy Burgh of Minneapolis, was convicted of practicing healing without a basic science certificate. The defendant, who is 29 years of age, and a barber by trade, was immediately sentenced to a straight work house term of ten months.

After a dinner was served at the Town and Country Club, on November 13, the members of the Minnesota Academy of Medicine, were presented with two interesting papers, one by Dr. R. G. Allison, Minneapolis, on "Radiation Therapy," the other by Dr. L. C. Bacon, St. Paul, on "Schlatter's Disease."

The Upper Mississippi Valley Medical Society held its October meeting at Wadena, Minn., with a large attendance and an interesting program being presented by Drs. C. B. Wright, H. S. Diehland, Theo. H. Sweetser, all of Minneapolis. Dr. W. W. Will, Bertha, president of the state association was guest of honor.

The Stearns-Benton County Medical Society will be hosts to a large gathering of medical men at St. Cloud, Minn., on November 21, in honor of Dr. W. W. Will, Bertha, president of the state medical association, and Dr. E. J. Simons, Ah-Gwah-Ching, new councilor of the District association. Prominent speakers to be present are: Drs. Morris Fishbein, Chicago; J. A. Myers and C. B. Wright, Minneapolis, and S. A. Slaytor, Worthington.

The Minnesota State Board of Medical Examiners is attempting to ascertain the whereabouts of one Szent Norager, who has used the alias of Dr. James Edward Petri and Dr. E. Mendoza. This man is of Danish descent between 35 and 40 years of age and speaks English rather brokenly. This man has represented himself in the city of Minneapolis as being an M.D. His whereabouts at the present time are unknown. Within the past year he has lived at the following addresses in Minneapolis: 1110 Ulysses St. N. E., 4008 37th Ave. S., and 3863 Minnehaha Ave. He has been represented as a patent medicine salesman and a fortune teller. Any information concerning this individual will be very much appreciated by the Minnesota State Board of Medical Examiners.

The Hennepin County Tuberculosis Association broadcasts over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters) every Thursday at 11:15 A. M. On September 20, it began a continued story of one family's experience with tuberculosis. The physician in the story, who finally succeeds in tracing the source of the infection to a grandmother who was a frequent visitor in the home, is known as "Dr. Hennepin." This series will continue through January 2, 1936. For a number of months, a second series of broadcasts by the association has been featured by WTCN, (1250 kilocycles), the Minneapolis and St. Paul Pioneer Press and Minneapolis Tribune Station. "Dr. Teeby" is the published listing of this program which is now on the air every Friday at 2:30 P. M. In this series, Freda, a house maid, who has advanced tuberculosis but does not know it, infects a number of families. The story of her contacts, revealed in situations which take the radio audience to homes, restaurants, clinics and to the office of Dr. Teeby and other physicians provides the theme for this series. The broadcasts over WTCN at this time will be continued indefinitely. Over WLB (1250 kilocycles, University of Minnesota Station) the Hennepin County Tuberculosis Association broadcasts from 1:00 to 1:10 every Friday a series of talks on famous men and women whose lives were cut short by tuberculosis. Kenneth Ramsland, of the University of Minnesota, presented the first talk in this series on Friday, November 1. His subject was "Robert Louis Stevenson." This series will continue through January 11, 1936. For the month of November, the subjects will be: "Elizabeth Barrett Browning"; November 15, "Heine"; November 22, "Ralph Waldo Emerson"; November 29, "Keats."

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Sixteen room house on city block, land worth $10,000. House cost $40,000 to build; joins Catholic Church property. Two bathrooms, running water in four rooms, ten bedrooms, full basement, brick and wood structure. Beautiful spacious home or ideal location for hospital. Sixty miles to Eau Claire and LaCrosse, 100 to Madison. A hospital would have co-operation of all county doctors and city people. Write for further information. Price $18,000. Terms. Mrs. G. R. Sechler, Black River Falls, Wis.



Protect Your Home from Tuberculosis
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CHRISTMAS SEALS

The JOURNAL LANCET

Minneapolis, Minnesota
December 1, 1935

Vol. LV, No. 23
New Series

Influenza Lymphatica*
(The Pentatype of Influenza)

Roger A. Nolan, M.D.†
San Diego, Calif.

AS A SURGEON of the Medical Corps of the U. S. Navy with more than eighteen years service, I appreciate this opportunity of addressing this learned body on a subject which is obviously of special importance to public health. Most of my activity in the Naval Service has been confined to the officers and enlisted men and their families ashore, and of late my chief concern has been with a disease of which I am about to speak.

The three names by which this condition is spoken of are infectious mononeucleosis, glandular fever, and monocytic angina. Putting these pretentious three together it gives us a picture—it is infectious; there is a glandular involvement; and there is pain and fever. This condition is prevalent along the entire west coast; sporadic cases are many throughout the middle west; and it has been in the east for years, but has not been recognized. How do I know this? I've seen it. The personnel of the Navy shifting from east to west continuously with their families are examined by us leaving and arriving, giving us the opportunity of talking with the mothers who have for the past seven months told us of the illness of their children. North, south, east, and west—the symptoms have been identical with those contained in this report. The mothers permitted me to bleed these children doing blood counts, Kahn test, and the Paul and Bunnel agglutination test. They were examined and in all the typical cases generalized adenopathy was noted. This condition I've seen in babies from two weeks up to 14 years of age. The diagnoses of these cases by physicians who had attended them were such as these: (1) German measles (because of a rash). (2) Malnutrition. (3) Enlarged glands. (4) Tuberculosis. (5) Cervical adenitis. (6) Tracheo bronchitis.

I am indebted to Dr. Alex M. Lesem, Health Officer of San Diego County, San Diego, California, for bringing this situation to the attention of the State Department of Public Health authorities in Sacramento.

In 426 B. C., Hippocrates for the first time described the gross picture of the disease now known to us as influenza. Centuries later Pfeiffer tells us of the bacillus which bears his name and was thought by him and others to be the etiological factor of influenza. He further writes and describes a recognized entity which he calls glandular fever. This we are to speak of later. And then the remarkable Osler made a classical subdivision of influenza which rendered its vast complex symptomatology most understandable. He accomplished this by taking four of the major systems of the body and fitting them separately into the gross symptomatic and clinical picture,

*Named by Roger A. Nolan, Lieutenant Commander (MC), USN.

*Presented before the joint meeting of the Montana State Medical Association and the Western Branch of the American Public Health Association in July, 1935.

†Lieutenant Commander (MC), U. S. Navy, U. S. Naval Air Station, San Diego, Calif.

resulting in four types: No. 1, the respiratory type, affecting the respiratory system; No. 2, the gastro-intestinal type, affecting the gastro-intestinal system; No. 3, the rheumatoid type, affecting the voluntary muscular system, and type No. 4, affecting the nervous system; and then he stopped. Yet he too writes of a glandular fever, describing it in his masterly but brief manner. Now because of my observations, data, etc., I herein add to Osler's classification of types of influenza and introduce to you the belated pentad, namely: Influenza Lymphatica, affecting primarily the lymphoid system and tissues of the body.

This paper consists of two reports: one written on December 30, 1934, six weeks after the first cases were noted, and the second report herein submitted. Early recognition of this disease and my reason for anticipating an epidemic was based on my experience while stationed at the United States Naval Powder Factory at Indian Head, Maryland, some seven years ago—1928.

In November of that year the U. S. S. Nitro called to take on one million pounds of powder for distribution to ships of the fleet. Her last port of call had been Panama. On her departure it was noticed that a mild influenza, respiratory in type, appeared among the 700 civilian employees. A little later in the public school, the registration of which was about 900 pupils, sypmtoms of so-called glandular fever appeared. As I recollect, I saw and diagnosed about 250 cases of this school's enrollment. I called this matter to the attention of the State Public Health authorities, who sent two investigators and they concurred with my findings. We three agreed that we had never observed a similar clinical picture in children before. At this time my diagnosis was made on the information obtained from half of a printed page in Osler, in which he described this condition now known as glandular fever.

Note of facts: No. 1, arrival of the ship from Panama, and the contact of its crew with mass population ashore had resulted in the appearance of a mild influenza epidemic, respiratory in type, within ten days after departure of the ship. No. 2, appearance of so-called glandular fever in juvenile population.

December 30, 1934: First Report

1. The early cases were first noted in Coronado ten days after the arrival of the fleet from the east coast on November 9, 1934, in the homes of officers and men who were given leave. Many were suffering from head colds, etc., and 500 cases of mild influenza were noted in the fleet on their trip from Panama to the Coronado—San Diego area.

2. The symptom-complex noted in the present epidemic is distinctive. In the cases of children from six months to five years of age, the onset was noted by the parent; in those between the ages of five to thirteen years the onset was noted by the parent or school teacher, and was aptly termed " a change in the personal characteristics." Among the younger children some were cranky, others fretful, not wanting to play and preferring to lie about; this sign in most cases was constant. The changed mannerisms lasted from three to five days and then a series of symptoms developed which were of such moment that a doctor was called to the home.

3. The symptomatology varied but little in the 220 early cases: (a) Fever was constant symptom —100 per cent, ranging from 100 to 104 degrees. (b) Pain in back of neck—80 per cent. (c) Vomiting—10 per cent. (d) Adominal discomfort—20 per cent. (e) Blood counts, total, red, white and differential were made on over 50 cases. The persistent picture was this: (1) Red counts normal or nearly so—100 per cent. (2) Hyperleucocytosis—40 per cent, as high as 28,000, with polymorphonuclears occasionally predominating. (3) Leucopenia—66 per cent, as low as 4,000. (4) Startling increase of abnormal lymphocytes in the blood in all cases at some period during the course of the disease. (5) Presence of abnormal moncytes seen in 80 per cent. (6) Lymphoblasts in abnormal amounts in 35 per cent.

Symptoms

Fever: The temperature was taken in many cases by the parents who became alarmed at the sudden rise. In 95 per cent of all cases this initial rise of temperature always occurred at about four p. m. No chill preceded the rise in temperature. The patients became flushed, were lackadaisical for three days prior to the onset, initial rise of temperature was always over 100 degrees, and in many cases reached 104 degrees. The patients were dopey at this time, sallowness and a pinched expression of the face was noted in those over four years of age. Dreaming was constant with mild delirium.

Pain In Back of Neck: The symptom of pain in the back of the neck was investigated and in all of the cases it was due to cervical myositis shown by the exaggeration of pain when patients voluntarily or involuntarily rotated the head

on the neck. The reason for this myositis is easily traceable to the *infallible* diagnostic symptom, namely: a particular type of adenopathy of the posterior cervical glands and others in the neck. In differentiating this adenopathy from other types, canary bird, feathery palpation is essential so that the small, shoe button glands may be made out bilaterally, numbering from 15 to 40, by running the finger over the mastoid process down to the acromio-clavicular joint. These glands are identical to touch with those of the glands felt in lues except that they are mildly painful. This finding is now further checked by extending the lower limbs of the children and finding the same glandular condition in both groins and exilla. This glandular condition is persistent for a period of one month or more after the onset of convalescence.

Vomiting: The symptom of vomiting occurred in about 10 per cent of all the cases and followed the rise in temperature. It was not severe and the withdrawal of cold drinks and solid foods, and giving no cathartics appeared to control this symptom and differentiated it from the vomiting seen in enteritis. There was no pain, tenderness or rigidity of the abdominal musculature. The abdominal discomfort may be due to the involvement of the mesenteric glands and spleen and is apparently reflex in character. A constant search for enlarged spleens has failed to reveal any.

Observations

(1) Recovery of all cases to an apparently normal health status within three weeks has been noted. The blood picture, agglutination test and noticeable specific adenopathy, all modified, remain, however, for an indeterminate time.

(2) It is highly infectious for all children under 13 years of age. It must be differentiated from the exanthemata, catarrhal fever, acute meningitis, influenza, tonsillitis and diphtheria.

(3) Glandular fever in a baby, child or adult seen for the first time is difficult to diagnose. When seen in epidemic form it is easily noted and is a pleasant condition to treat, for the aftermaths are few if any. In severe adult cases it must be differentiated from typhoid, diphtheria, lymphatic leukemia, common cold, tuberculosis, syphilis, influenza, acute catarrhal fever and neuroses.

Examples of Mal-Treatment

(1) A child, five years of age, developed a toothache. The mother put a hot water bag to the child's jaw. The cervical glands on that side were enlarged and became extremely painful. The blood count jumped and the temperature rose.

(2) A child, while on the fifth day of convalescence, was compelled by the mother to attend her acrobatic dancing school. Hand stands, etc., were the order of the day. That night all the glands in her neck were enlarged and painful. Temperature and blood count rose and the patient suffered a definite setback.

(3) Because some 18 cases complained of pain in the back of the neck, mothers rubbed that part of the area with salve, ointments, etc., and in all of these cases rise in temperature, enlargement of glands and rise in white count was noted.

(4) High temperatures in rooms—75 to 82 degrees—are considered harmful. In these cases convalescence was protracted and also in some few cases where solicitous mothers had given children hot tub baths.

Is epidemic glandular fever in children a blessing in disguise? Does it mean a percentage of immunity against the dreaded future pandemic of influenza vera?

General statements: (a) Etiology to date unknown; (b) pathology indefinite; (c) apparent sequelae—poor resistant blood picture; (d) death rate nil if uncomplicated; (e) blood picture in epidemics definite; (f) introduction of this disease into a juvenile community is preceded by a mild epidemic of influenza in contact adult population; (g) influenza may demonstrate itself in the adult household following a case of glandular fever in the child.

Paul and Bunnell Agglutination Test

If this simple agglutination test substantiates the clinical picture of epidemic glandular fever and proves it to be a definite entity, then hematological investigation in the so-called mild epidemic of catarrhal fever, and acute influenza is to be considered and encouraged, for it is a quick step in differentiation.

July 1, 1935: Second Report

The Thousandth Case of So-Called Epidemic or Glandular Fever (Infectious Mononucleosis)

1. Its infectiousness is most manifest. It is now definitely established in this epidemic that the incubation period is about five days and no one living in the same apartment or house, be he infant, juvenile or adult, if contact is daily, can escape infection. Because of this proven infectiousness and because it is now making itself manifest in the enlisted personnel of this area, if early recognition is made possible aboard a ship or station, it would seem advisable to quarantine.

2. Its classical picture is complete. Having seen, from November 19, 1934, to July 1, 1935, not less than 2,000 cases in children, ages one month to 18 years, and not less than 55 adults up to the present writing (many of these cases in conjunction with other medical officers), I can clearly state that its clinical picture is constant and its symptomatology the same as mentioned in the prior article, dated December 30, 1934, or the so-called first report.

3. Error in diagnosis is almost impossible. Since November 1st, in Coronado, the total population of which is about 8,700, its juvenile population being 1,800, all attending one major public school, daily attendance averages 800 normally. There is a permanent school nurse in daily attendance at this school. Four civilian doctors practice in the aforementioned population. There is a public health nurse and a public health doctor located here also. In seven months not a single case of scarlet fever, mumps, measles, whooping cough, diphtheria, influenza, pneumonia, septic sore throat or tuberculosis has been reported by any physician in this area. This is strange when we note the fact that the absentees from the public school have averaged 100 cases daily since November 19th. The cause of this absence has been illness which is epidemic in character, all cases similar clinically and hematologically.

4. Hematological findings are most helpful in backing up the clinical picture. Daily total white counts which may vary from 3,000 to 40,000 in adults or children. Those with the introductory high white count will drop to the low white count in two weeks' time. Those who start with a leukopenia of 3,000 to 4,000 will rise to normal in some indefinite time.

Differential blood diagnosis at least three times a week to note shift of cells and sudden rise in total counts is essential.

Anomalies in differential counts: In the large lymphocytes enormous granules are noted in most cases. All the white blood cells appear to be fragile, and on stained smears will lose much of their shape and character. Lymphocytes show lymphoblasts and turk cells at intervals. (a) The presence of monocytes in abnormal amounts at some time; (b) blood picture, if studied, is constant; (c) all blood counts are taken in the morning.

Interesting Complications and Observations

(a) Rash (dermatological manifestations; (b) earache; (c) giant local adenopathy; (d) stomatitis; (e) acetone in the urine; (f) unexplainable asthenia; (g) tracheo bronchitis.



The rashes we have seen during this epidemic in infants, children and adults have been so complex that to classify them would be difficult. The cases numbered about 50. These rashes were first punctate, resembling the rash of scarlet. It was noted early in this condition that the rash appeared over the back and chest, then appeared on the arms, but never below the wrists, hardly even on the face. The same may be said about the lower limbs, the rash stopped bilaterally at the middle of each thigh. Appearance of rash showing tape over post cervical glands. The punctate rash resembles scarlet, then changes to a maculopapular form like that of German measles. It was most confusing.

Acetone In the Urine

In 100 patients whose urine was examined daily, acetone was found to be present at some time during the acute onset, or early stage of this condition.

Unexplainable Asthenia

The two following cases I was in daily contact with. Case No. 1, a pharmacist's mate (note graph and leucopenia). This man had worked with me daily over a period of five months. Prior to this his infant child, age three months, devel-

oped so-called glandular fever. While the baby was convalescing, the father started to complain. He noticed glands in the back of his neck and groins were enlarged and painful. Stiffness of both sides of his neck and a feeling of pressure on flexing the head on chest were other complaints. He called my attention to this. I placed him under quarantine, taking daily blood counts, etc. (see graph). A rash like that shown in photograph, resembling German measles, appeared with lines of demarcation one week after onset, lasting over a period of three weeks. He was drowsy, suffered from a noticeable asthenia, and on exertion complained on three different occasions of feeling so faint that he had to lie down. He remained in quarantine only four days, then I returned him to work. The asthenia persisted for one month. His appetite at all times was excellent. He had a mild stomatitis. His sleep over a period of two weeks was not restful, and he stated that he dreamed nightly—all of his so-called dreams were pleasant. This case was considered one of protracted convalescence due to the fact that he was willing to co-operate with me to determine if activity prolonged the outstanding symptom of asthenia.

Case No. 2, Active Aviator, Lieutenant, U.S.N., initials, W. B. W. This officer had two children, both of whom I treated for so-called glandular fever. On March 26, this aviator, who is able and experienced, while flying out at sea over the airplane carrier Saratoga, reported by radio that he was unable to make a landing after four attempts because of intense unexplainable weakness complicated by a feeling of indefinite faintness. Because of this message, he received radio orders from the commanding officer of the Saratoga to fly south some 100 miles to the San Diego Base, where he landed with some difficulty. He was hardly able to stand when he climbed out of the cockpit. He went home exhausted and reported to the sick bay the next morning. He was examined by two flight surgeons who gave him the Schneider index (a test of circulatory efficiency) score of naught. This method of determining physical fitness is based on pulse and blood pressure determinations while prone, or standing and after exercise. Arbitrary values are assigned to pulse and blood pressure readings and their changes when posture is changed, and to pulse responses and return following exercise.

Because of his statement by radio to the flagship, plus his symptoms, plus the Schneider, he was immediately grounded and turned over to me for study and observation. As he arrived at the stage of convalescence, succeeding Schneider tests were made by aviation doctors with the following results:

		Index Values
3-26-1935	Zero	7: Unsatisfactory.
3-27-1935	Plus 2	8: Poor.
4-2-1935	Plus 15	9: Satisfactory.
4-5-1935	Plus 8	12 to 18: Very good.

Acetone was present on two occasions. On April 5th, against orders, he took a plane and made a short hop to determine if the asthenia returned. He flew for ten minutes, returned, made a good landing, but again complained of asthenia and faintness while in the air. The fleet sailed on April 29th. This lieutenant went aboard, apparently well, from a clinical and hematological standpoint. The following is his statement:

"On March 26, I first noticed a loss of appetite, indigestion. I did not notice any fever. I flew that day, making two bombing hops of a total duration of three and one-half hours. On the night of the 26th, I took off from the deck of the Saratoga and was in the air one hour. I noticed a depressed feeling come over me while flying. I made four attempts to land, but because of the way I felt, decided it was too dangerous. I then requested radio permission to fly to the shore base. On this trip I noticed that my eyes were weak and tired. After landing, I went home and to bed, exhausted. The following morning I reported to the squadron at 9:00 a. m. I felt weak and finally reported to the Chief Flight Surgeon."

He was examined and turned over to me as mentioned previously.

Tracheo-bronchitis was noticed in about five per cent of the cases. The duration of this condition was about five days.

Summary

In 1928, on the east coast, and in 1934, on the west coast on two occasions mass adult influenza infection in controllable supervised communities were followed by so-called glandular fever epidemics in the juvenile population, last port of call in both instances being the Canal Zone.

Individual or household observations were made in which the lymphatic influenza or glandular fever in the children of the family appeared. The adults in the house became ill, manifesting symptoms of true mild influenza as we know it.

Vice versa, the adult officer who arrived at his home with mild respiratory type influenza infected his children; they invariably responded with the clinical and hematological picture I have attempted to describe. This I saw in over 200 instances.

The fact that it was described by Pfeiffer while

he was studying the influenza bacillus is of interest.

The clinical symptomatic picture in the youngsters, leaving out the adenopathy and blood picture, is the same as mild adult influenza.

Its contagiousness, asthenia, leucopenia, clouded etiology, known yet unknown pathology, its sporadic and epidemic nature, its variance in virulence as to individual age incidence, time of year and geographic location, its complications, the rash seen in some epidemics of influenza being identical with that of so-called glandular fever, making for half-hearted diagnoses of scarlet fever and German measles, the difficulty attending the prevention of its spread, its recurrent and recrudescent phases all permit me to say, "Know what there is to be known of influenza and all its types and the recognition of sporadic and epidemic influenza lymphatica will be diagnosed more often and we will more likely find that frequently so-called German measles is but a dermatological manifestation of the present so-called glandular fever, which I prefer to call influenza lymphatica." German measles in sporadic form is often diagnosed when the physician knows the case is not scarlet fever or true measles; therefore, it must be German measles because of the presence of a papular rash and an adenopathy. This is ordinarily the basis on which the diagnosis is attained. Now in the future let us investigate our so-called German measles by using the means at hand in a laboratory, and think in terms of influenza or so-called glandular fever. If this is done, fewer diagnoses of German measles may be made.

Conclusions

(1) The early clinical picture in cases of high or low total white counts is the same.

(2) One hundred and twenty-five blood specimens from adults and children with the typical clinical picture and blood counts were tested, using the Paul and Bunnell agglutination method. Twenty-five proved to be positive, 16 doubtful and 24 negative.

(3) The severity of the case apparently does not enter into the picture.

(4) Close study of this test does not permit me to state at what period of the disease it makes its appearance.

(5) The test was positive, doubtful or negative early in high and low total white counts.

(6) Outstanding clinical cases, on repeated tests, refused to release the secret looked up in this Paul and Bunnell agglutination test.

(7) The test when positive is most picturesque and definite.

(8) It is hoped that this test will be used in all cases where epidemic influenza should appear, for in this way its relation to influenza will be brought to light.

(9) Cases diagnosed tentatively as mild scarlet fever and true German measles in ten instances gave us a positive Bunnell test.

(10) The type of adult that comes down with a lymphatic manifestation in this epidemic is the individual who is not susceptible to the common cold or seasonal grippe or catarrhal fever. It was also noted that their personalities were phlegmatic in type, generally.

(11) Osler, Hare and others have observed that in epidemic influenza, regardless of type, contagious diseases of childhood seem temporarily to disappear. This fact was noted to a superlative degree in Coronado, from October, 1934, up to and including May, 1935.

Warnings

(1) In all cases convalescing any surgical procedure, this includes tonsillectomy and tooth extraction, repeated blood counts and close observation will prevent embarrassment.

(2) On leaving Coronado to come here, many new officers' and enlisted men's families were arriving, it was noted that after eight or ten days the babies in these families were brought to the dispensary with what the parents stated was a "cold in the head." These cases are now and will continue to be diagnosed influenza lymphatica and not glandular fever, monocytic angina or infectious mononucleosis.

(3) A protracted lymphoid tissue convalescence is to be looked for if cases are mishandled.

All Total and Differential White Counts Made in the Morning Every 48 Hours

This Series Shown to Demonstrate White Cell Anarchy in the Totals and Shifting Differentials—All Cases Similar Clinically

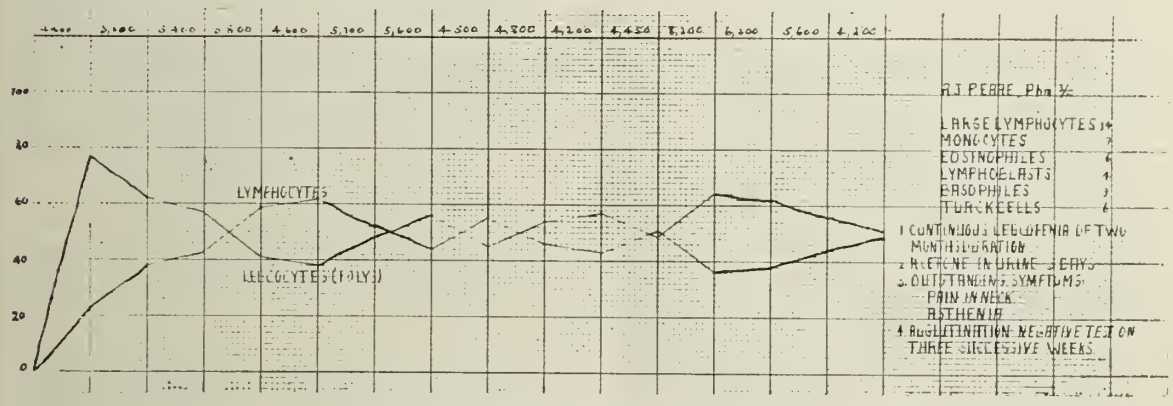


FIGURE 1

Agglutination test, negative on seven tests. A severe case, with severe rash of long duration. Kahn, negative. Cervical and inguinal adenopathy severe.

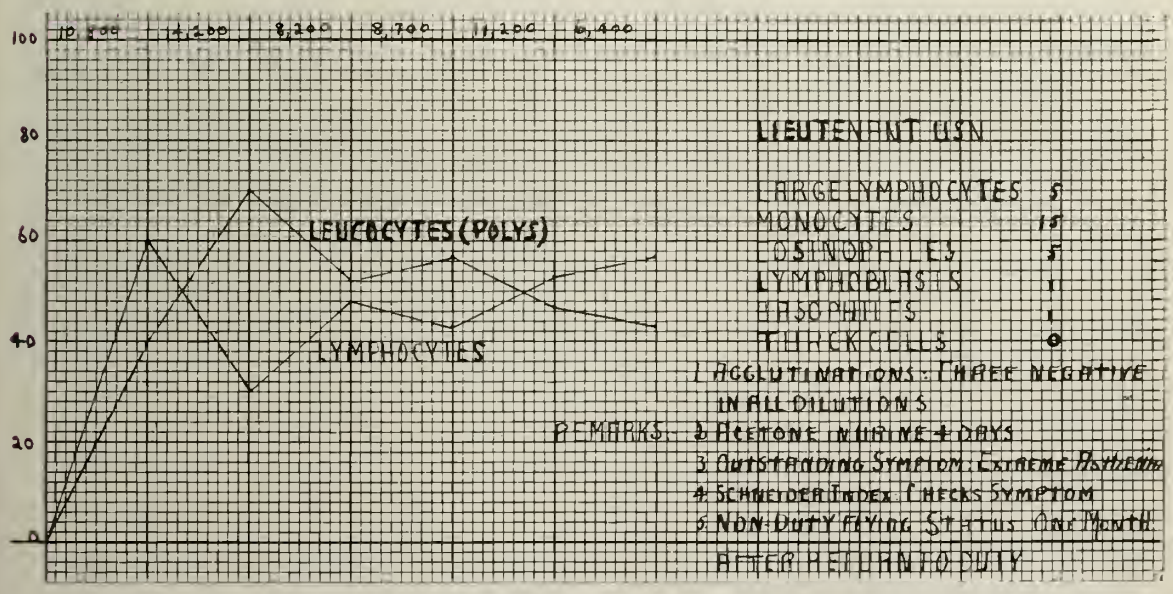


FIGURE 2

A mild case. Negative Paul-Bunnell agglutination test. No rash, and Kahn negative. Cervical adenopathy severe.

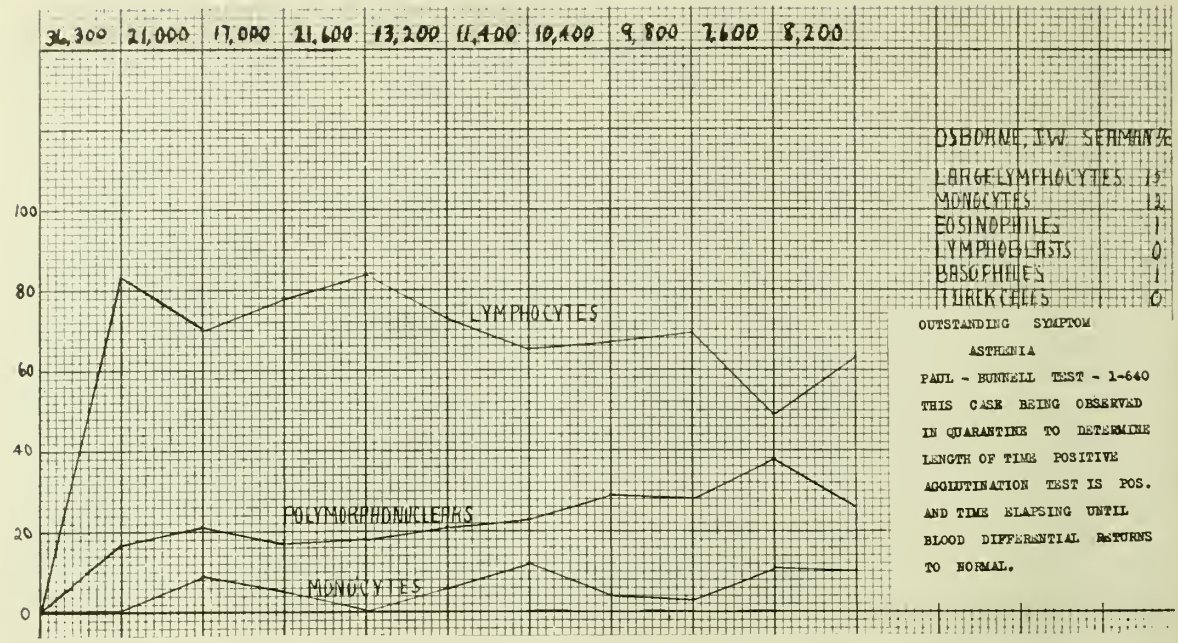


FIGURE 3

Agglutination test positive on four occasions in two weeks' time. Negative on 17th day. Mild case, no rash. Kahn negative. Nodal triangle severe.

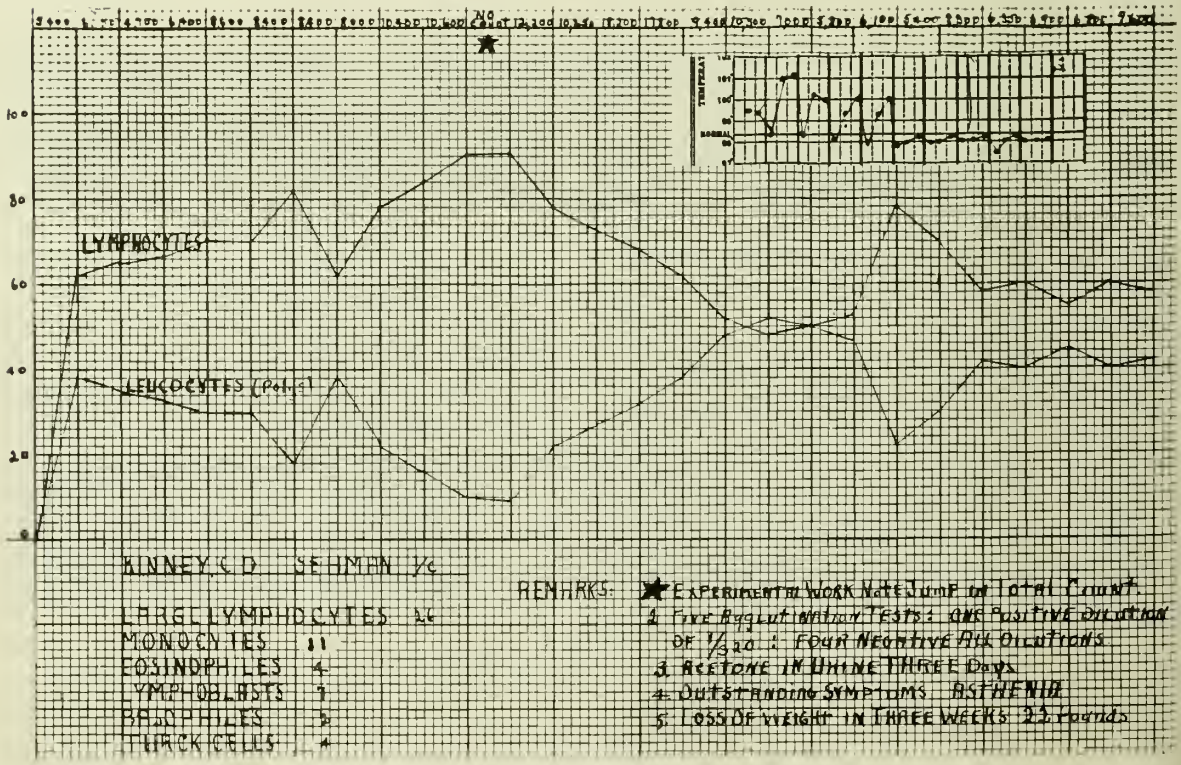


FIGURE 4

Severe case. Positive Paul-Bunnell agglutination test on 8th day, 1 to 320. Rash present. Kahn negative. Nodal triangle and cervical adenopathy.

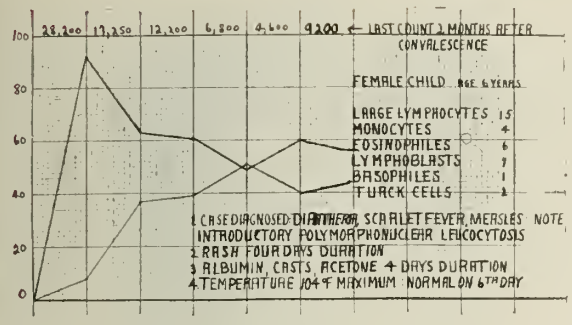


FIGURE 5

Top Curve: Polyleucocytes.
Lower Curve: Lymphocytes.

Severe case. Rash present, seen in consultation with four other doctors. Diagnosis: glandular fever. Agglutination test positive, 1 to 64. Cervical adenopathy predominates. Kahn negative.

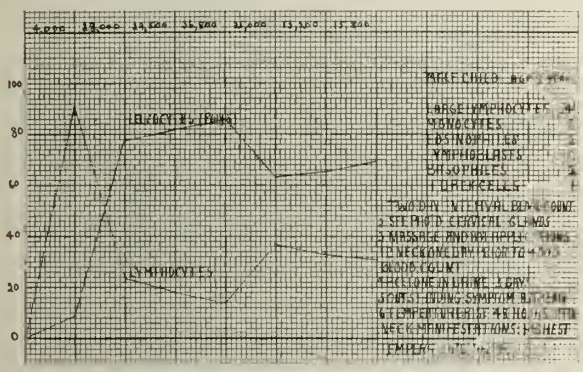


FIGURE 6

Very severe case. Agglutination test negative. Cervical adenopathy predominates. Kahn negative.

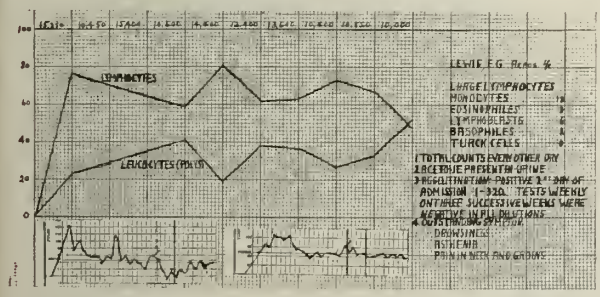


FIGURE 7

Very severe case. Nodal triangle present. Rash present. Agglutination test positive, 1-640, 1-1200.

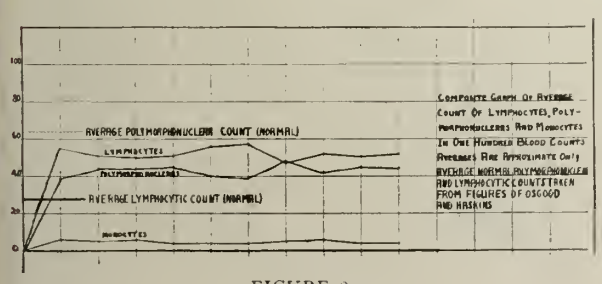


FIGURE 8

THE NODAL TRIANGLE

by

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The condition when elicited is definite. Sacculated nodes ranging from the size of a pea to a bean are in linear arrangement converging at the inner aspect of the knee joint, but never below this point. These lymphatic dilatations or sacculations take on temporarily the nature of the lymphangioma or fibroma. They lie in the subcutaneous tissue just below the corium; the skin is normal in appearance and shows no local signs of inflammation over nodal triangular lines.

By palpating over these sacculations with pressure, pain is elicited along the nodal chain.

The number counted along the great saphenous vein in one male adult was 54; the number counted along the accessory saphenous vein was 32. In a child, aged 2, a total of 42 nodes made up the triangle.

This sign appears in the thigh within one week following initial introductory symptoms and coordinates with the white cell counts, the symptomatology, the coryza and conjunctivitis, and the presence of acetone in a large percentage of urines.

This sign, with symptoms, will persist and mask the true diagnosis if rest in bed is not instituted and the various types of mal-treatment avoided (see reference 1 and 2).

With this sign, and using information obtained from blood counts, the Bunnell agglutination test, the clinical evidence noted in 3,000 or more cases (see reference 2), and daily consultations with other medical officers, permit me to use my imagination in attempting to describe the reason for the pathologic formation of this so-called nodal triangle.

Lymphatic vessels may become abnormal due to mechanical injury or obstruction. It is also caused by bacteriologic factors, for instance, in elephantoid fever, which finally results after many attacks in true elephantiasis; also the reaction of lymph vessels (lymphangitis) is daily seen in dispensaries due to local infections. There is also evidence to suppose that lymph vessel walls may lose their tone and dilate, causing an interference with the osmosis that exists between the venous blood and the lymph system. This factor may account for the muscular asthenia especially noted in the lower limbs of those affected with this condition. It is further thought the return flow of

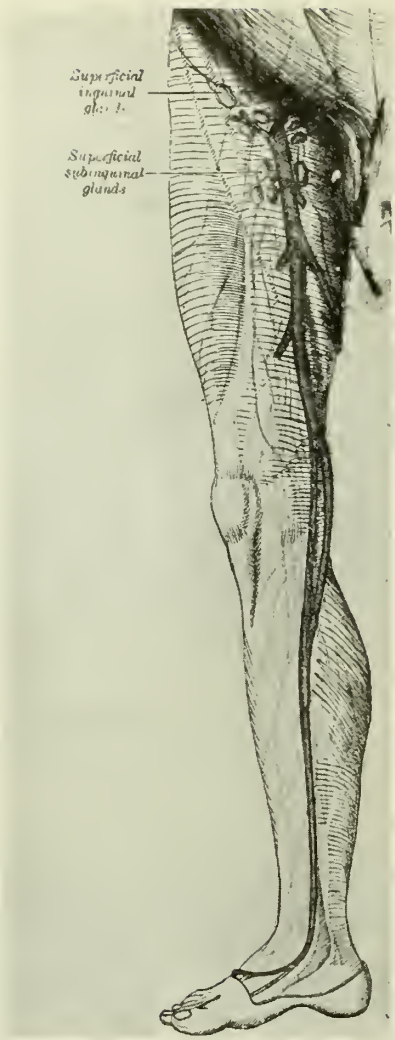


FIGURE 1

Normal superficial lymph angiology of the lower extremity, taken from Gray's *Anatomy*.

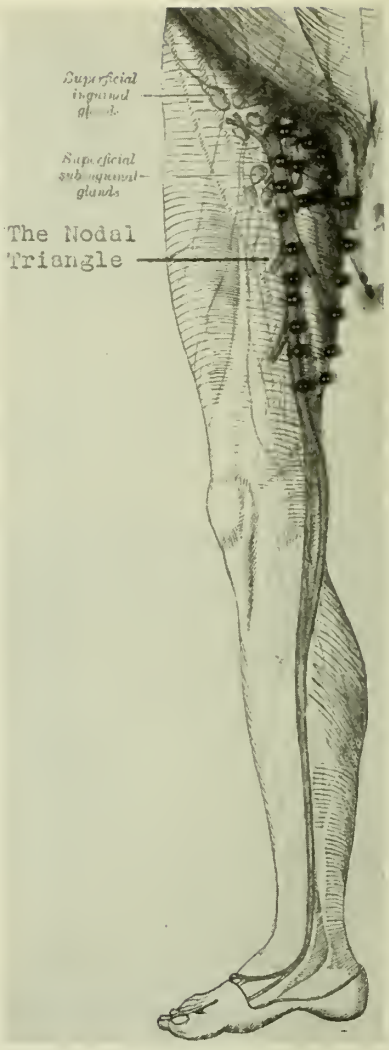


FIGURE 2

Same picture, showing definite palpable pathology along the course of the greater and accessory saphenous veins of the thigh. NOTE TRIANGULATION IN THIS DIAGRAM.

lymph from the lower extremities to the torso would be impeded, causing further dilatation. This dilatation of lymphatic vessels, with lymph stasis, resulting in increased intervalvular, intravascular pressure, can produce the nodal, sacculated, cord-like, doughy feel, which go to make up the diagnostic sign. (Such a condition is aptly described in *Diseases of the Skin*, by Stelwagon in the chapter on lymphangioma.)

It is my feeling that the organism or virus causing influenza is alone responsible for producing the picture of influenza lymphatica, heretofore known as glandular fever epidemicus. It is not the writer's intention to convey the thought that this condition is new. It is as old as influenza, and if Osler classified four types of influenza, namely, the respiratory type, the gastro-intestinal type, the rheumatoid type, and the nervous type, with the evidence that has been gathered during the past epidemic in juveniles and adults, it is permissible to add to this classification, one which affects primarily the lymphoid system and the tissues. I would further state that this type may mask the diagnostic picture of anyone of the aforementioned. In other words, one or more types may be present in a given case.

This sign is considered of extreme importance for the following reasons: (1) For purposes of early differentiation. (2) A possible explanation for muscular asthenia. (3) As another check in establishing the fact that the organism or virus, causing influenza in some juvenile epidemics, has a specific action on the lymphatic system of the body, thereby producing a train of signs and

symptoms. (4) When the patient shows by the blood count, etc., and atypical picture of so-called glandular fever, and the cervical, axillary, and inguinal adenopathy is apparently normal, this sign in the lower extremities will furnish the evidence demonstrating adenomatosis in an anatomical location rarely if ever looked for. (5) Its presence is apparently due to a mechanical irritation (muscle squeeze) during the prodromal or acute introductory stage of the influenza virus affecting the lymphatic system.

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A CLINICAL EVALUATION OF COLLAPSE THERAPY MEASURES IN THE TREATMENT OF PULMONARY TUBERCULOSIS*

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COLLAPSE therapy has now been in use for a sufficient period of time to give some fairly definite ideas as to its value in the treatment of pulmonary tuberculosis. Utilized originally very cautiously in a limited group of individuals suffering from advanced almost strictly unilateral disease, its use has gradually been extended to those with less localized lesions, frequently earlier in the course of the disease, with greater benefit to a larger number of patients. So well have these measures been received and so much emphasis has been placed upon their use that at times the fundamental necessity for constitutional rest in the treatment of pulmonary tuberculosis has been entirely disregarded. The following is an attempt to fairly evaluate the various procedures from a study of our Glen Lake experience with them during the past twenty years.

Pulmonary tuberculosis of slight to moderate degree, uncomplicated by cavitation or pulmonary hemorrhage, under constitutional treatment alone, shows a considerable tendency within a reasonable period of time to proceed toward recovery. This is particularly evident in infiltrations of the exudative type and those of recent origin. Under such circumstances, toxic symptoms, as well as cough and expectoration of tubercle bacilli, may disappear very rapidly, and annular shadows visualized on roentgen films but unaccompanied by physical findings of cavity, may clear very promptly. Constitutional treatment for a reasonable period of two or three months should be given first choice with this type of lesion, and if the response seems favorable should be continued alone if it seems evident that the desired result will be obtained. No one, from physical examination or study of the x-ray films alone, can consistently or accurately foretell what will occur in any given patient, hence the importance of this observation period. Failure to improve, persistence of symptoms, positive sputum, or annular shadows, or the development of cavity, hemorrhage, or other signs of extension of the disease should call for some supplementary treatment in the form of that type of collapse best suited to meet the local condition. The institution of collapse immediately upon admission in patients with early lesions will, undoubtedly, subject a considerable number of individuals to collapse therapy who really do not need it. On the other hand, too great a delay in establishing collapse where indications present themselves may rob the patient of his best chance for recovery, or greatly prolong his disability. The following is a consideration of the advantages and disadvantages of each individual type of collapse measure to give some idea of the clinical value of the procedure and the relative place each should occupy in our therapeutic armamentarium.

Artificial Pneumothorax

Artificial pneumothorax, from the results obtained from nearly twenty years of experience has become our first choice when some form of collapse seems advisable. It is the most flexible and controllable type of procedure, capable of giving a maximum collapse with the least proportionate risk and hence is the most valuable weapon when aid is badly needed. Its success depends upon efficient collapse of cavity or symptom-producing lesion, which, in turn, is contingent upon the presence of free pleural space and the absence of firm limiting adhesions between the parietal and visceral pleurae in this local area. Its use has gradually increased as indications have been extended from approximately 10 per cent of patients a number of years ago to 50 per cent or higher at this time. It was utilized originally only in strictly unilateral disease but is now applied extensively in bilateral pulmonary tuberculosis with benefit to many more individuals. This is possible because the collapse may be increased or

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decreased at will and because of the availability of bilateral pneumothorax should contralateral extension of the disease occur.

The following consideration of the advantages and disadvantages of pneumothorax may perhaps give a better estimation of its real value than mere statements could convey.

Advantages

1. Flexibility—Given a patent pleural cavity, the amount of collapse maintained by pneumothorax may be increased or decreased by the operator at will; thus, it may be established according to indications, slowly in the presence of contralateral disease or rapidly to control profuse hemorrhage. It may be increased as necessary to regulate symptoms or decreased, slowly, by neglecting refills or rapidly by aspiration of air, to relieve dyspnea from contralateral disease, fluid formation, accidental or spontaneous pneumothorax, or to relieve the load on the contralateral lung. This flexibility is possessed by artificial pneumothorax alone among collapse therapy procedures and constitutes its greatest single advantage.

2. Degree of Collapse—Unilateral pulmonary collapse as great as 90 per cent may be obtained from artificial pneumothorax in the absence of limiting adhesions. This is far greater than is possible by any other method or combination of methods. The degree of collapse maintained is an extremely important consideration in the efficient treatment of extensive disease with cavitation where marked mechanical reduction in lung volume is necessary in order to produce results.

3. Revocability—This procedure being controllable may be discontinued at will unless the lung has become bound down by thickened visceral pleura following an effusion. It may, therefore, be used as a temporary type of collapse.

4. Absence of Shock—Pneumothorax carefully established and slowly increased produces little or no reaction and no patient is too ill to permit an attempt at its induction. It is primarily a bedside procedure and may be induced even during the course of active pulmonary hemorrhage.

5. Low Risk—The risk to life involved in the establishment and maintenance of pneumothorax is minimal, not over a small fraction of one per cent, certainly as low as that presented by any other type of collapse. When considered in relation to the results obtained the proportion becomes more strongly in favor of the pneumothorax.

Disadvantages

1. Frequency of Refills—Pneumothorax once established must be maintained by repeated injections of air at regular intervals to replace that absorbed from the pleural cavity. During the early course of the treatment the refills may be necessary every few days. As time goes on and the absorption of air from the pleural cavity diminishes, the interval between them may be extended gradually until a two to four-week or longer schedule is established. The ideal should be to maintain a fairly uniform degree of collapse in the desired position without permitting too great an expansion of the lung between insufflations. As the administration of pneumothorax can be rendered painless by the use of local anesthesia and the refills given in the doctor's office as an ambulatory treatment after the tuberculosis is under control and the patient has been worked up on exercise, this frequency of refills becomes more of an inconvenience than a serious disadvantage.

2. Duration of Treatment—The healing of a tuberculous focus is a slow process. Collapse therapy measures may rapidly control symptoms and obliterate cavity, but the actual healing of the inflammatory process still progresses relatively slowly. Surgical therapy alone does not cure the tuberculosis. It is essential that the collapse be maintained for a sufficient period of time to permit firm healing before any attempt is made to re-expand the lung if reactivation of the disease is to be avoided. Continuation of the collapse for a considerable period of time serves as insurance against later trouble as well as a constant reminder to the patient that he must take care of himself or possibly pay the penalty.

3. Financial Burden—The question of the financial burden of continuation of artificial pneumothorax is one which must always be taken into consideration. This, to the patient discharged from the public institution, constitutes a transfer of financial responsibility from the community to the individual. Unfortunately, this transfer comes all too frequently at a time when the individual has not as yet regained his regular working capacity. The problem has been answered for this group of individuals by the establishment of public out-patient clinics at which patients, unable to pay private physicians, may obtain their pneumothorax refills without cost until they are returned to working capacity.

4. Difficulty of Obtaining Refills—A few years ago this disadvantage of pneumothorax was of relatively more importance than at the present time but it still is a factor to be considered in the

patients who reside in certain isolated or outlying communities. The increased use of pneumothorax, the more extensive training received by medical students in its use, as well as improved transportation facilities render this disadvantage of little importance except in the more sparsely settled portions of the country.

5. Pleural Effusion—A clear pleural effusion develops frequently during the course of artificial pneumothorax, at some time or other in at least 60 per cent of patients so treated. Occurring as it does as the result of tuberculous pleurisy, it is seen more frequently in patients with more extensive tuberculous pulmonary lesions. It is ordinarily an inconvenience rather than a serious complication and as a rule is not disturbed except when it produces mechanical embarrassment through its weight or by displacement of the mediastinum. The majority of effusions are absorbed spontaneously although some persist for a considerable period of time. The development of fluid is usually followed by some thickening of the pleura which may interfere with expansion of the lung at a later date. This pleural thickening may be of value to the patient by stabilizing a flexible mediastinum, thus permitting more effective collapse of the lung. The pleural changes which follow pleurisy with effusion usually result in a diminution of air absorption from the corresponding pleural cavity. Occasionally an obliterative pleuritis follows which gradually fuses the pleural surfaces with a resultant loss of the pneumothorax.

6. Tuberculous Pyopneumothorax—This complication represents only a more intensive stage of the same inflammatory process which produces the ordinary clear pleural effusion. It occurs in approximately 10 per cent of the patients in whom artificial pneumothorax is established because of extensive active disease. Its course may be relatively benign or very stormy. Some purulent effusions disappear spontaneously, others following aspiration and saline irrigation, while many persist and, conditions permitting, eventually require extrapleural thoracoplasty with obliteration of the pleural space in order to bring about a cure of the condition. When uncomplicated by bronchial fistula or secondary infection, external drainage probably never should be instituted. Because of greater familiarity with the condition and improved results obtained in its treatment, this complication now causes much less concern than it did a few years ago.

7. Accidental Pneumothorax — Accidental pneumothorax, i.e., accidental collapse of the lung due to its injury during the institution of pneumothorax or subsequent refill, occurs considerably more frequently than is ordinarily recognized. Ordinarily a very benign process which escapes recognition unless special search is made, it may be of considerable clinical importance by producing dyspnea, or pain, or even seriously jeopardizing the patient's life. If symptoms are produced, the whole condition may be relieved by the removal of the excess air from the pleural cavity. It is of infinitely greater importance in bilateral pneumothorax than in the unilateral type. The lung injuries which produce this condition may offer a portal of entry for tubercle bacilli into the pleural cavity resulting in subsequent pleural effusion.

8. Spontaneous Pneumothorax—This condition results ordinarily from rupture of a peripheral abscess cavity or emphysematous bleb into the pleural space. It may occur in any tuberculous individual with or without an already established pneumothorax. During the course of artificial pneumothorax it may happen as a result of tearing of the lung at the site of attachment of an adhesion because of undue stress in this local area either from excessive intrapleural pressure or sudden chest wall motion. The condition is ordinarily much more serious than accidental pneumothorax because of the frequency of secondary pleural contamination from the ruptured abscess or cavity. It occurs rather infrequently but is always a serious complication.

9. Air Embolism and Pleural Shock—When air embolism occurs during the course of artificial pneumothorax, it does so by the entrance of air into a branch of the pulmonary vein either through a needle directly in the lumen of the vessel or more usually from a tearing of the lung, opening a branch of the pulmonary vein to the air in the pleural cavity under positive pressure. It happens relatively infrequently but at least half such accidents prove fatal. Precautions should always be taken to reduce the possible incidence of its occurrence. It is not, however, altogether preventable. It may occur even several hours after a refill has been given in a positive pressure pneumothorax. No accident of this sort has occurred at the sanatorium for the past four years during which period approximately 35,000 injections of air have been given but it may happen without warning at any time. Much has been written on the question of pleural shock and its occurrence during artificial pneumothorax. It is quite evident, from reading many of the published reports, however, that not a few of them may well be explained on

the basis of air embolism. Either condition is a tragic accident not soon forgotten.

Duration of Treatment

The period of time over which an artificial pneumothorax should be continued is one which is open to considerable question. In general it may be stated that the more extensive the disease and the larger the cavity, the longer the period of time which should elapse before any attempt is made to discontinue the treatment. Artificial pneumothorax established for early limited tuberculosis of an exudative type may probably be discontinued after a year or two with a fair chance of a successful result. The patient's general condition and his apparent resistance against tuberculosis must be taken into consideration, of course. The period of collapse should certainly be extended with three to five years as a minimum where there has been more extensive disease or definite cavity formation. If the disease has been very extensive or the patient has conquered it only with great difficulty, the pneumothorax should, perhaps, be continued for the rest of the patient's life as insurance against future trouble. As the majority of the complications occur in the earlier months of artificial pneumothorax, the risk of its continuation becomes less with the passage of time. Certain limited pneumothoraces which are not collapsing cavity or controlling symptoms should, after a reasonable trial, be discontinued, for the percentage of complications in such cases is considerably higher than during satisfactory pneumothorax. Certain other partial pneumothoraces which have alleviated symptoms without completely controlling them, or have reduced cavities without bringing about complete closure, may, in the presence of active contralateral disease, be continued with advantage until the trouble in the opposite lung has cleared sufficiently to permit the substitution of another more satisfactory type of collapse therapy. Under such circumstances, partial pneumothorax may be extremely valuable.

The discontinuation of any pneumothorax is an experiment in each individual instance. This reduction of pneumothorax should, therefore, be brought about slowly that conditions in the lung may not be altered too rapidly. The collapse should then be continued with the lung close to the chest wall, but not in contact with it, for a number of months until it is fairly certain that no exacerbation of the tuberculosis will occur. Should symptoms reappear or cavity reopen, the pneumothorax should be increased immediately. When a pneumothorax has once been discontinued for several months, it may still be possible to re-establish it, but the chances are greatly against this, particularly so, if pleurisy with effusion has occurred during the course of the original treatment. If mistakes are to be made in the discontinuation of pneumothorax, they should be made on the conservative side by continuing it too long rather than discontinuing it too early.

Pneumothorax Evaluated

Artificial pneumothorax is our first choice and most valuable member of collapse therapy group for the treatment of pulmonary tuberculosis and its complications. Its use where clearly indicated will, if satisfactory, double or treble the given patient's chance of recovery over what he has to expect without the institution of such collapse. The advantages of flexibility, controllability, revocability and the possible extent of collapse far outweigh all of the combined disadvantages listed. Except for unusual indications, it should receive our first consideration wherever collapse therapy is indicated.

Bilateral Pneumothorax

There is a definite limited field of usefulness for bilateral pneumothorax in the treatment of pulmonary tuberculosis. Bilateral tuberculosis itself, alone does not constitute the ordinary indication for the use of this type of treatment, though a few patients so afflicted may obtain good results by this method. The best field for its application lies in that group of patients who, during the course of unilateral pneumothorax, develop a contralateral extension or exacerbation of the disease either with or without hemorrhage but of sufficient degree to warrant an attempt at secondary collapse. If the original tuberculous lesion has been collapsed for a sufficient period of time to give satisfactory assurance that it is clinically healed, it may be possible to discontinue the original pneumothorax and later collapse the second side, thus establishing an alternating bilateral pneumothorax. If, as more frequently occurs, the contralateral exacerbation or extension develops before the original lesion has had sufficient time to heal, simultaneous bilateral pneumothorax may offer an adequate solution to the difficulty. Approximately ten per cent of our pneumothorax patients have been of this simultaneous bilateral type. The difficulties of controlling bilateral pneumothorax and balancing the collapse of the two sides and at the same time avoiding distress and discomfort to the patient will probably always limit its use to the hands of those who have had considerable experience in artificial pneumothorax work. Careful use of this bilateral procedure has,

undoubtedly, saved a number of our patients from an untimely tuberculous death. The following table (Chart I), taken from a recent presentation of this subject[1] summarizes our Glen Lake experience with this procedure over the twelve-year period from 1922 to 1934:

CHART NO. 1
BILATERAL PNEUMOTHORAX SERIES

	Alive	*Dead*
Discharged—Bilateral Pneumothorax		
Clinically Successful	20	..
Partial Clinical Success	5	..
Failure	1	..
Total	—26	..
Sanatorium Patients		
Clinically Successful	12	..
Partial Clinical Success	10	..
Questionable (too soon to classify)	3	..
Failure	3	..
Total	—28	..
Attempted Bilateral Pneumothorax		
Unilateral Pneumothorax with Contralateral Phreniphraxis	7	..
Unilateral Pneumothorax with Contralateral Thoracoplasty	2	..
Extrapleural Paraffin Pack with Contralateral Phreniphraxis	1	..
Thoracoplasty	1	..
Unilateral Pneumothorax	1	..
Questionable Prognosis—No Further Collapse	2	..
Unfavorable Prognosis—No Further Collapse.	5	..
Total Alive	—19	
Dead		11
Dead—Bilateral Pneumothorax		
Clinically Successful	3	..
Partial Clinical Success	8	..
Failure	25	..
Total		36
Total	73	47—110

The results obtained by this method as in unilateral pneumothorax are directly proportionate to the success in obtaining closure of cavity and control of the tuberculous lesion in the lung. If judiciously used and carefully handled, it is a distinct addition to the collapse therapy field.

Intrapleural Pneumolysis

The success of artificial pneumothorax either unilateral or bilateral depends upon efficient collapse of the lung in the region of the cavity or the symptom-producing area. Many patients, as a result of previous pleurisy, present adhesions between the parietal and visceral pleurae, most frequently in the region of greatest disease, which may seriously interfere with satisfactory collapse of the lung in this area. Some of these adhesions under gentle increase of the pneumothorax will stretch sufficiently to permit satisfactory collapse. Force, however, should never be used in an attempt to bring this about, as the visceral attachment of such adhesions is frequently much weaker than the parietal and tearing of the lung will surely lead to complications. If, after two or three months of gently increasing the pneumothorax, it is found that adequate collapse has not been obtained and stereoscopic x-ray films seem to show that there are local limiting adhesions which might possibly be suitable for section, intrapleural pneumolysis should be considered. As all adhesions are not visualized on x-ray films and the impression obtained from such a study is often quite inaccurate as to size and extent of adhesions, diagnostic thoracoscopy, which is attended by almost no risk, should be employed frequently, the operator being prepared at the time to cut any adhesions found suitable for section. Adhesions of the string, cord or thin band type, not containing lung tissue, may be safely sectioned after thorough coagulation to insure hemostatis. Certain other adhesions of the cone-shaped type with a limited parietal attachment may be satisfactorily separated from the chest wall attachment by means of the endotherm. A few others unsuitable for section because of their short attachments may, after transpleural anesthetization of the parietal pleura, be coagulated thoroughly at the chest wall and allowed to remain in position to stretch later, according to the technique of Matson.[2] Numerous adhesions will be observed which are absolutely unsuitable for section because of contained lung tissue.

The percentage of complications encountered following intrapleural pneumolysis is directly proportionate to the number of large questionable adhesions accepted for section. The endotherm method of coagulating and cutting these adhesions offers numerous advantages over that presented by the use of the galvano-cautery, although excellent results have been reported by the use of the latter in the hands of experienced men. The high cost of equipment for this type of work will probably limit its use to the larger clinics where the volume of work available will justify the expense of the equipment needed. It is quite probable that at the present time there are a considerable number of adhesions being sectioned which are not of clinical importance and do not seriously interfere with the efficient collapse of the lung. A conservative estimate would be that 10 to 15 per cent of pneumothorax patients present adhesions suitable for section which may be cut with benefit to the patient. The total from a large pneumothorax series, however, will mean a considerable group of patients whose pneumothoraces may be rendered satisfactory by this treatment. Beneficial results depend upon acquiring satisfactory collapse and the absence of complications.

Phrenic Nerve Surgery

Probably no type of collapse therapy has developed so rapidly or been accepted so readily as surgery directed against the phrenic nerve. This has undoubtedly come about because of the apparent simplicity of the procedure, the lack of reac-

tion following it, and because of some of the excessively enthusiastic reports published on the subject. A certain feeling of impatience on the part of both the patient and the physician as the cure becomes irksome likewise frequently intensifies a desire to have something done to accomplish results in a hurry. Such a feeling unquestionably sooner or later leads to the induction of collapse on slighter indications and eventually to a false estimation of the value of the procedure involved. That this has occurred in the case of phrenic nerve surgery is beyond question for it is today the most abused of our collapse therapy procedures. Considered fundamentally, phrenic nerve interruption induces a paralysis of the corresponding half of the diaphragm which is followed by its rise to a more or less expiratory position whose level is determined by the relation between intrapleural and intra-abdominal pressure and the presence or absence of limiting lateral adhesions. A unilateral reduction in chest capacity rarely in excess of 30 per cent and frequently considerably less occurs. Active diaphragmatic contraction ceases but is replaced by paradoxical motion which on quiet breathing may be slight but which under stress may approach if not equal the active motion previously present. A limited reduction in capacity of the hemithorax follows, with a relative rather than an absolute immobilization.

The operation is a relatively simple one, from the surgical standpoint, to one thoroughly familiar with the anatomy in the region exposed, if local conditions are normal. It may become quite tedious, however, if abnormalities are present or the local structures have been disturbed by previous operation. The risk should be minimal, if care is exercised, although a considerable number of serious accidents with some fatalities have been reported in the literature and almost every structure in the neck in this region has been injured at some time or other, according to published reports. Interruption of the phrenic nerve may be made either temporary or permanent, but the trend in favor of temporary interruption at least upon original operation is gaining favor steadily. Temporary interruption of the phrenic nerve is produced by crushing the nerve or sectioning it and resuturing immediately, while the permanent type is accomplished either by excising a centimeter or two of the main trunk or by section of the main trunk and avulsion of the distal segment. All accessory branches must be interrupted, in either case, if complete paralysis of the half of the diaphragm is to be obtained.

Any anatomical difficulties of identification of the phrenic nerve or any of its branches, or any other nerve trunks encountered at the original operation may be easily solved by resorting to electrical stimulation of the suspected structure, the resulting diaphragmatic contraction, if it be a phrenic nerve or branch, easily identifying it as the desired nerve. As gentle electrical stimulation by means of an induction coil does no harm, one need have no fear of stimulating any structure in the region of the fifth or sixth cervical roots or any other nerve when searching for accessory phrenic nerve branches or roots of origin. During re-operation, performed following a temporary interruption before return to function has occurred, electrical stimulation is of no value in identifying the phrenic nerve trunk itself, because it is already interrupted. It may be of value in identifying other nerves, however, if such becomes necessary. Where re-operation is anticipated following a temporary phrenic interruption, it is well to leave a black silk marker about the phrenic nerve at the time of the original surgical procedure as advocated by Alexander in order to facilitate finding it at a subsequent operation. One should be certain, however, that the black silk is of sufficient size and the dye sufficiently stable so it does not fade out or disintegrate before re-operation is undertaken.

Advantages

Phrenic nerve surgery presents certain advantages which recommend it in suitably selected cases.

1. Simplicity—Phrenic nerve interruption as a primary operation is a relatively simple procedure in the hands of one experienced in surgery of the region. It upsets the patient very little and may be performed either in the operating room or at the bedside as indications warrant.

2. Degree of Collapse—It provides a moderate amount of unilateral reduction in lung capacity (30 per cent maximum) together with a varying degree of immobilization which should favor the healing of a tuberculous process.

3. Flexibility—Phrenic nerve interruptions may be made temporary or permanent according to the design of the operator. The temporary type may be repeated several times at intervals of five to six months in order to prolong the paralysis of the diaphragm. A very severe crushing of the phrenic nerve, however, may induce a permanent paralysis or at least a very delayed return to function. As each subsequent re-operation becomes increasingly difficult, particularly in those patients who form excess scar tissue readily, the physician should decide after the nerve has been crushed

once or twice whether he wishes to maintain a permanent paralysis or permit the nerve to regenerate.

4. A Preliminary Procedure—Phrenic nerve interruption, either temporary or permanent as a preliminary procedure does not in any way interfere with subsequent attempts to establish pneumothorax on the same side, nor can we find from our experience any conclusive evidence that it in any way increases the chances of a successful establishment of pneumothorax later.

5. Duration—Temporary interruption of the nerve persists for five to five and one-half months on the average. The procedure may be repeated several times at rather long intervals, a slight advantage over the repeated refills necessary in artificial pneumothorax if the two conditions were otherwise of equal value.

Disadvantages

1. Uncontrollability—When the phrenic nerve is interrupted, the diaphragm becomes paralyzed immediately. The degree of collapse cannot be varied nor can the rapidity of its establishment. The only flexibility in the procedure lies in the temporary operation, but even in this the phrenic nerve once crushed is rendered functionless for five months or longer.

2. Degree of Collapse—The degree of collapse obtained by paralysis of half of the diaphragm rarely exceeds 30 per cent of the chest capacity on that side and is frequently much less. The immobilization obtained is relative rather than absolute. We would neither expect, nor would we obtain a high percentage of good results with a thirty per cent pneumothorax unless directly localized about the area of disease. We should not expect more from a phrenic neurectomy.

3. Location of Collapse — The paralyzed diaphragm rises upward from the bottom of the chest. The effect of this paralysis and immobilization, however, occurs throughout the lung. Tuberculosis occupies the upper portion of the chest more frequently than the lower. The effect produced by paralysis of the hemidiaphragm must be distributed between both good and bad areas of the lung, thus detracting from its effect upon the local disease.

4. Exaggerated Ideas of Value—One of the greatest disadvantages of phrenic nerve surgery at the present time lies in the tendency for both patients and physicians to expect too much of this simple procedure, particularly in more advanced disease, condemning it as valueless when it has merely been found inadequate to control the extensive lesion present.

5. Gastro-intestinal Disturbances—A certain number of patients, a small but nevertheless definite group, complain of gastro-intestinal disturbance following paralysis of one-half of the diaphragm, particularly the left. This may consist of fulness, bloating, belching and upper abdominal discomfort, apparently as a result of change in position of the organs of the upper abdomen with the establishment of a gas trap in the colon. A considerable number have some temporary difficulty with bowel function resulting from loss of intra-abdominal pressure on straining because of the paralyzed hemidiaphragm. The majority of patients, however, soon learn to accommodate themselves to these difficulties. More serious troubles, including intestinal obstruction, have been reported. In our own experience, covering several hundred patients, no truly serious difficulties have been encountered.

6. Dyspnea—A few patients following phrenic nerve interruption, particularly when it is done for rather extensive disease, complain of some dyspnea either transitory or more or less permanent. We have repeatedly noted in patients who have had a preliminary phrenic interruption and were later subjected to extrapleural thoracoplasty that dyspnea occurred more frequently than in patients subjected to extrapleural thoracoplasty alone. This, of course, has been more noticeable in the patients with more extensive disease. The rehabilitation of the collapse therapy patient and his subsequent working capacity is very frequently directly related to his vital capacity, hence the advisability of using a temporary phrenic nerve procedure wherever possible, even where some more radical form of collapse is indicated at a later date.

7. Interference With Expectoration—Contrary to the general opinion that diaphragmatic paralysis facilities expectoration, we have seen a considerable number of patients in whom greater difficulty was experienced after the phrenic nerve interruption than prior to it. This has been particularly important in the individual subjected to thoracoplasty following diaphragmatic paralysis in whom difficulty with expectoration in the postoperative period is of very serious import. Retention of secretions in the chest during this period is quite likely to be followed by an extension of the tuberculous process.

We still feel that phrenic nerve surgery is of value and that it has a definite place in our collapse therapy program, but it has, from experience, become our second resort procedure where help is really needed, because it has been found

less dependable than artificial pneumothorax. Here, as in many other types of work, it is extremely difficult to properly evaluate the effects of any one certain procedure. This is particularly true where some form of collapse is instituted early in the course of a tuberculous lesion and at the same time the patient is confined strictly to bed for the first time. If some active surgical intervention is undertaken, all good results subsequent to that date are frequently attributed to the collapse therapy procedure, whereas the favorable effect may have been the direct result of constitutional treatment or both acting simultaneously rather than either one alone. Unquestionably, some of the favorable results claimed for phrenic nerve surgery are very greatly influenced by such a combination. From our experience with phrenic nerve surgery, over a series of several hundred patients, approximately three-quarters have obtained some symptomatic improvement subsequent to the operation and a few have shown almost miraculous improvement with absorption of extensive infiltration, disappearance of large annular shadows which have been present for a considerable period of time, and a marked improvement in symptoms. However, while many have been helped, few have obtained complete and permanent results where the original disease was extensive nor is such to be reasonably expected considering the extent of the disease and the intensity of immobilization obtained. More favorable results are to be expected in early infiltrations but here also the need for help is less pressing. It exhibits its greatest value where help is needed the least.

Phrenic neurectomy has in the past been recommended under certain conditions which from our experience and the results obtained no longer warrant such interference.

1. As a Test Operation—Phrenic interruption has been recommended as a test operation to determine the stability of the process in the contralateral lung before undertaking thoracoplasty. From our experience we feel that the procedure is absolutely unreliable when used in this way as we have repeatedly performed such operations on one side in the presence of very recent and active tuberculosis in the contralateral lung without observing exacerbation of the disease. As it is ordinarily used clinically, sufficient time is not permitted to elapse between the phrenic surgery and the thoracoplasty to accurately recognize exacerbation of the disease in the contralateral side even if it did occur.

2. To Prevent Aspiration into the Lower Lobe—Surgery of this type has been advocated as a preliminary to thoracoplasty where an upper stage operation is contemplated as a first procedure in order to prevent aspiration of tuberculous material into the base on the same side. It has repeatedly been demonstrated that iodized oil introduced into the lung by the supraglottic method will pass as readily into the bronchi in the lower lobe on the side of the paralyzed diaphragm as it does into the opposite side. From this it is quite evident that the paralyzed diaphragm does not necessarily prevent aspiration of material into the base, and should not be relied upon to avoid such a complication.

3. To Facilitate Expectoration—While a great many patients will note greater facility in expectoration following diaphragmatic paralysis, there are a few in whom this function is definitely impeded by the procedure. This interference may become particularly important if the patient is then subjected to extrapleural thoracoplasty following which retention of sputum within the chest is quite likely to be followed by serious complications.

4. As a Necessary Preliminary to Thoracoplasty—Although advocated frequently for this reason, we do not feel from our experience that the phrenic nerve should be interrupted routinely before thoracoplasty. If there is some other good indication for performing this operation before the thoracoplasty is undertaken, then it should be done by all means, but not as a routine only. Its routine use in this way may unnecessarily handicap the patient at a time when he needs all of his reserve for the major thoracoplasty operation itself.

There are two distinct groups of patients in whom a preliminary phrenic nerve interruption prior to thoracoplasty may be of distinct value. The first includes the patients presenting extensive, clinically unilateral, tuberculosis consisting largely of chronic disease but associated with a considerable area of recent exudative tuberculosis. Preliminary phrenic nerve interruption here may aid the patients and tide them along until they have recovered from the acute process and allowed the disease to become more fibrotic, thereby materially lessening the risk from extrapleural thoracoplasty later. The second group of patients includes those with extensive chronic disease with cavitation in one side, complicated by an area of recent tuberculosis in the contralateral lung. With pneumothorax unsatisfactory or impossible, a preliminary phrenic nerve interruption may be performed upon the bad side in order to obtain what-

ever benefit possible during the period in which the patients are clearing the recent spread in the contralateral lung, before thoracoplasty is undertaken. We have found phrenic nerve surgery of distinct value in both of these fields. The occasional occurrence of dyspnea and severe difficulty in expectoration previously mentioned have warned us to be cautious in the use of phrenic nerve operations prior to thoracoplasty unless there is something definite to be obtained by the preliminary procedure.

Another disadvantage which we have occasionally encountered where diaphragmatic paralysis has been induced prior to thoracoplasty has occurred in patients who have obtained an excessively high rise of the diaphragm and liver on the right side. The liver here acts as a solid block, seriously interfering with the falling in of the chest wall even after radical extrapleural thoracoplasty. With extension of the thoracoplasty field and the inclusion of patients with earlier lesions of a more localized type, a great number of partial thoracoplasties are being performed. If the upper thoracoplasty by itself will adequately care for the tuberculous process, there is no necessity for a permanent paralysis of the diaphragm below. The functioning lower lobe may be of distinct advantage to the patient during his future life, particularly in the event of some unforeseen complication in the contralateral lung which might necessitate future surgical interference there. Any preliminary attempts to control the disease by phrenic nerve surgery in such instances should be limited to one of the temporary types of procedure. Permanent phrenic nerve interruptions may or may not be necessary in patients with more extensive disease which require complete thoracoplasty. If it is not, a functioning diaphragm adds to the vital capacity and hence often to the working capacity of the individual. If conditions warrant a permanent combination of thoracoplasty and diaphragmatic paralysis, the phrenic nerve may be interrupted following the thoracoplasty as easily as prior to it without subjecting the patient to some of the possible complications above mentioned.

Phrenic nerve surgery has become our second choice procedure in the collapse therapy field. When used for the treatment of earlier lesions, a higher percentage of good results will follow. A large proportion of patients will show symptomatic improvement even in the presence of extensive disease but few will obtain complete and permanent results from this procdure alone. One of its chief disadvantages lies in expecting too much from a relatively simple procedure, thereby wasting valuable time when other more efficient measures might be instituted.

Extrapleural Thoracoplasty

Extrapleural thoracoplasty represents a radical surgical remedy which may be of use when all other methods have failed. Originally its use was confined to strictly unilateral lesions of the chronic type, extensive in nature in patients who had usually been sick for a long period of time. All too frequently it was not attempted until extremely late in the course of the disease when the patient had become exhausted by the process and everyone was grasping at straws in an attempt to avoid a fatal outcome. It is not surprising that numerous bad results were encountered when it was utilized in this way. We have learned from sad experience that patients in the "precadaveric" stage who have lost their resistance against tuberculosis should not be subjected to radical surgical procedures, as nothing but a miracle can save them. This point is only too well emphasized by the figures presented by Archibald[3] in 1929 as illustrated by his third group of patients with a high operative mortality and not a single permanent good result. On the other hand we should not refuse surgery to a patient merely because he is a bad risk if he manifests resistance against tuberculosis and gives promise of a useful existence providing a good result can be obtained. The general tendency throughout the country now is to accept patients for thoracoplasty at an earlier stage where suitable indications present themselves. This has resulted in a higher percentage of good results and a lower surgical mortality.

The surgical treatment of chronic tuberculosis of a degree which warrants thoracoplasty usually resolves itself into the treatment of intrapulmonary cavity or the closure of an empyema pocket. For this a mechanical reduction of chest capacity is necessary. This is supplied by a radical extrapleural thoracoplasty of modern type. The shock and serious reactions so frequently observed following the older extensive thoracoplasties, roughly performed, have been greatly reduced following the modern multiple stage procedures as now carefully performed with a minimum of trauma, and the risk correspondingly reduced. Extrapleural thoracoplasty presents certain advantages recommending it in the treatment of certain patients suffering from advanced tuberculosis and its complications.

1. Extent of Collapse—Radical extrapleural thoracoplasty ranks next to artificial pneumothorax in the degree of unilateral pulmonary col-

lapse produced, with 60 to 75 per cent easily possible. When supplemented by some form of extrapleural or extraperiosteal pressure, additional collapse may be obtained, particularly in local areas. If supplemented by a phrenic nerve interruption, still further collapse may be added.

2. Permanency—Thoracoplasty once done is irrevocable. When once the collapse is established, it is permanent and cannot be undone.

3. Physiological Effects—Extrapleural thoracoplasty provides both compression and immobilization, the two factors which are of prime importance in the healing of extensive pulmonary tuberculous lesions. Compression is produced by the collapse of the chest wall itself and immobilization by regeneration of the ribs and consequent fixation of the chest wall.

4. Availability—Because the compression and immobilization is brought about by an entirely different mechanism from all other methods of collapse, it may be used under proper conditions after all other methods have failed.

Thoracoplasty does present certain disadvantages which limit its usefulness considerably.

1. Permanency—Because extrapleural thoracoplasty once performed cannot be undone, a proper selection of patients is absolutely essential. It should not be used for earlier lesions in which some other simpler or more temporary form of treatment might prove adequate.

2. Deformity—The question of deformity following extrapleural thoracoplasty may be adequately answered by stating that it is infinitely better to have a hole on the outside of the chest than one (a cavity) in the lung. The deformity which is produced may be somewhat disfiguring but it is not dangerous to life as is the pathological process for which it is performed. Proper placing of the incision, preservation of the nerve and blood supply to the muscles, and careful approximation of the skin consume slightly more time but are amply repaid by the improved cosmetic and functional results obtained. Extrapleural thoracoplasty even of an extensive nature should, in the patient of average nutrition, produce no gross deformity which cannot be adequately concealed by ordinary street clothing.

3. Scoliosis—The earlier thoracoplasty patients (1922 to 1924) often showed a considerable degree of dorsal spinal curvature with the convexity of the deformity toward the operated side. This we feel was largely the result of injury to the vertical muscles along the spine or their nerve supply at the time of operation. We now find that by carefully guarding this structure a straight spine is the rule rather than the exception and scoliosis is almost never seen.

4. Risk of Operation—It is not so many years ago that a 10 per cent operative mortality in thoracoplasty work was considered legitimate and reasonable. By a more careful selection of patients and more important still, a proper selection of time for operation, and with improved operating methods and care of patients, this has now been reduced to a figure comparable to that observed in other major surgery. Mortality rates as low as one or two per cent are reported occasionally. We have had a consecutive series of 208 operations on 86 patients without any operative mortality within six months after operation. In the last 158 patients upon whom 306 major chest operations have been performed, there has been but two deaths postoperatively, one not from the operation but from an accidental pneumothorax on the opposite side, the patient carrying a contralateral pneumothorax at the time the thoracoplasty was performed, the other from a tuberculous pneumonia fifteen days following a second-stage two-rib thoracoplasty, performed on a patient who was a very poor surgical risk.

5. Shock and Serious Postoperative Reaction—Postoperative shock was the rule in the early days of thoracoplasty and many of the patients remained in a very precarious condition for a considerable period of time. Such reactions were accepted as part of the procedure. We have seldom seen true shock in our work in the past few years and serious reactions have been infrequent. Transfusions of blood for shock or hemorrhage have not been necessary in our entire series. We have accumulated a considerable group of patients who have not missed a single meal following thoracoplasty procedures, and likewise a considerable number who have not required more than one or two hypodermics of opiates during the entire postoperative period. This we feel has been due in no small measure to the use of local infiltration anesthesia, taking ample time to perform the work as gently as possible, as well as to improved preliminary and postoperative treatment of the patient.

6. Interference With Working Capacity—Patients unfamiliar with extrapleural thoracoplasty at times fear the procedure because of the possibilities of its interfering with their future working capacity. A thoracoplasty operation properly performed will interfere less with the patient's working capacity than will the tuberculosis for which the operation is required. A patient, after an extrapleural thoracoplasty which

has produced a good clinical result, may return to any type of work which the underlying tuberculous lesion will permit. Arm function is sufficient to permit any but the most strenuous of activities and some patients have even indulged in these. As working capacity is often very closely related to vital capacity, it has been our aim to preserve as much of the functioning lung tissue as possible even in the bad side. For this reason we have for years performed limited thoracoplasties in patients presenting upper lobe lesions with uninvolved lower lobes and have avoided routine phrenic nerve interruptions in such patients in order to leave the patient with as great a vital capacity as possible. Supplementary phrenic nerve operations can always be performed at a later date if indicated.

7. Limited Number Suitable—While it is true that only a limited number of patients suffering from pulmonary tuberculosis are suitable for thoracoplasty, somewhere between five and ten per cent of admissions in this institution, the total number in the aggregate becomes quite large. It is to be remembered that the patient subjected to this type of procedure has usually tried every other method of collapse therapy as well as constitutional treatment without obtaining a complete clinical result. The majority accepted for it present a very unfavorable outlook unless something of the sort can be done. The results obtained when considered from this standpoint appear in an even more favorable light than when considered from the standpoint of ordinary pulmonary tuberculosis alone.

Results of Thoracoplasty

Since the first thoracoplasty operation was performed at Glen Lake Sanatorium on January 22, 1922, a total of 693 such operations have been performed on 276 patients. From this group 223 patients or 80.8 per cent are still alive, representing a total mortality in the series for this whole period of time from all causes of 19.2 per cent. Of the group who died 19 or 6.88 per cent per patient or 2.88 per cent per operation died within two months following the surgery. Eighty-nine per cent of this operative mortality, however, occurred in the first 43 per cent of the series. There have been but two postoperative deaths within the six-month period following operation during the past four years, as mentioned previously. In this same group there have been but three late deaths during the past four years, one at 6½ months from a tuberculous meningitis and a contralateral spread of tuberculosis, another nine months after her thoracoplasty, following an intra-abdominal operation, and a third, 19 months following thoracoplasty from contralateral spontaneous pneumothorax. The mortality then in the past four years has been 1.27 per cent per patient or 0.65 per cent per operation which compares favorably with that reported for major surgery in other parts of the body.

One hundred and forty-five thoracoplasty patients have been discharged from the sanatorium alive and of this group 77.2 per cent have been returned to at least part-time work. The mortality observed in this whole thoracoplasty group over the period of more than 13 years is far less than one could expect with a corresponding group of patients with far advanced tuberculosis without collapse of any sort in this same time period. The number who have been returned to useful active work is far in excess of what could possibly be expected without surgical intervention in a corresponding group who have tried all other means of recovery to no avail. The economic and public health aspects of this work are difficult to estimate but they are not inconsiderable. Extrapleural thoracoplasty, then, is an extremely valuable method of treatment for advanced tuberculosis, being utilized largely in a group of patients who have not responded to all other types of treatment. From this unfavorable group a very considerable number of excellent clinical results have been obtained.

An Evaluation of the Collapse Therapy Program

The absolute effect of the institution of collapse therapy in any given patient is at times very difficult to estimate, particularly where the various measures are utilized for an earlier tuberculous lesion because of the very variable course which the disease itself may run. We have attempted in the previous discussion to give some general estimation of the effect of each individual collapse therapy procedure inasmuch as this is possible. As numerous patients have been subjected to one, two, or even all of the collapse therapy measures in sequence or in combination, it is frequently impossible to definitely state just what the effect of each has been. Some general idea as to the effect of the collapse therapy program at Glen Lake Sanatorium may be obtained by a study of the following chart (Chart II) covering patients discharged from the institution over the period 1925 to 1934 inclusive. During this period the proportion of patients in the minimal, moderately advanced and far advanced cases has remained fairly constant (if anything, slightly more advanced cases), so that the favorable effects

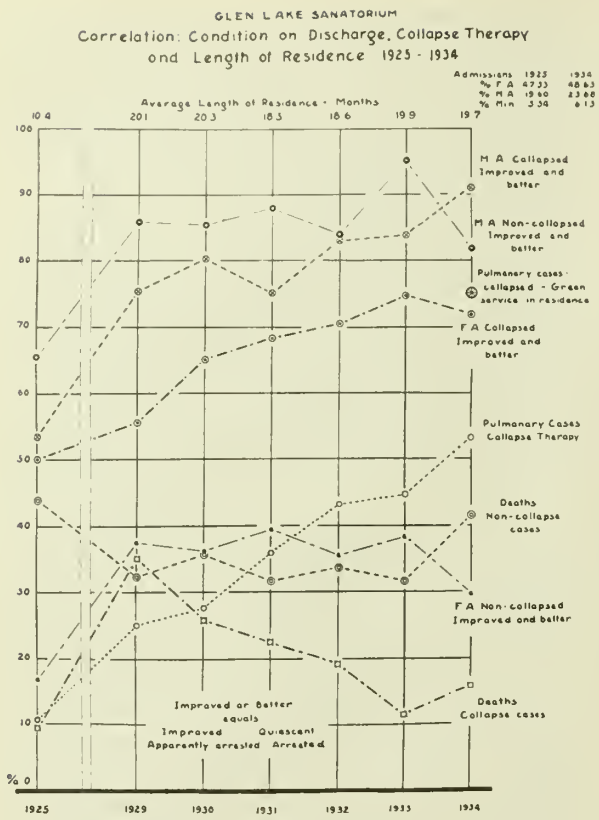


CHART NO. 2

noted cannot be explained on the basis of more favorable classes of patients admitted. We still find that 72.3 per cent of the patients admitted to the institution are suffering from advanced disease in spite of all of the publicity which tuberculosis has received in the past few years. The discrepancy between the figures quoted and the 100 per cent of admissions is represented by a group of non-tuberculous patients, and individuals with extrapulmonary and childhood tuberculosis sent to the institution.

The favorable effect noted consistently through the chart between the period of 1925 to 1929 may be partly the result of collapse therapy, but it is apparently more directly related to the increased average length of residence of patients which was doubled in this time interval. Since 1929 the average length of residence of patients in the institution has remained approximately constant between 18 and 20 months, so the additional changes since that time cannot be the result of increased hospital residence. From this chart we note that only 10 per cent of patients discharged in 1925 had been treated by all forms of collapse therapy. Since that time this figure has gradually increased until it reached 53.19 per cent of those discharged in 1934. At the same time the incidence of collapse therapy measures on certain individual services in the sanatorium has reached as high as 75 per cent of the pulmonary cases in residence. During the period 1929 to 1934 the percentage of cases discharged as dead in the uncollapsed group remained almost constantly between 31 and 34 per cent until 1934 when it rose to 41.85 per cent, whereas during this same period the percentage of deaths in the collapse therapy group dropped from 35.16 per cent to 11.11 per cent in 1933 with a slight rise to 15.87 per cent in 1934.

Considering the results in the various stages of tuberculosis with and without collapse in patients discharged alive from the institution, we find that the far-advanced group without collapse of any sort, patients discharged as improved or better (improved, quiescent, apparently arrested and arrested) from 1925 to 1929 shows a distinct improvement from 16.38 per cent to 37.73 per cent. This undoubtedly represents the effect of increased duration of hospitalization. Since that time the curve has flattened off and varied but little to 1933, with a distinct drop to 28.82 per cent in 1934. The far-advanced group treated by collapse therapy discharged as improved or better, however, shows a less striking improvement from 1925 to 1929 (50 per cent to 55.56 per cent), but subsequently has ascended gradually to 74.39 per cent in 1933 with a slight fall to 72.0 per cent in 1934. The designation "improved or better" includes the groups improved, quiescent, apparently arrested and arrested, of the Diagnostic Standards of the National Tuberculosis Association—1931. It is necessary, in order to obtain a fair comparison of the period 1925 to date to include these four in one group as prior to the change in classification in 1931, all patients discharged under collapse therapy of any type, no matter how good their condition, could be classified no better than "improved (collapsed)." Likewise the exercise factor in the classification and the desire of many patients who have obtained a good clinical result to return to their homes for the exercise period so alters the picture that an accurate correlation could not be obtained if only arrested cases were considered. It is quite evident from the study of this chart that collapse therapy has been of extreme value in this far-advanced group as the curve of increased use of collapse therapy almost parallels the curve of favorable results.

We note in the moderately advanced group, discharged as "improved or better" between 1925 and 1929, that the curve of the non-collapsed and the collapsed group run parallel, the non-collapsed rising from 65 to 85 per cent and that of the

collapsed group from 54 to 75 per cent. This again is apparently the effect of the increased length of residence during this period. From 1929 on, however, the moderately advanced non-collapsed curve remains almost stationary until 1933 when it takes a decided jump upward by 10 per cent which is followed by a fall of nearly 14 per cent in 1934. The curve for the collapsed group of moderately advanced patients discharged as "improved or better" oscillates slightly from year to year but the general tendency is upward. However, it has remained consistently below that of the moderately advanced non-collapsed group until the past year when the two curves crossed with that of the collapsed group reaching 91.22 per cent. This paradoxical condition is not an argument against the use of collapse therapy. It merely means that in this institution the patient with moderately advanced tuberculosis who seems to be handling his disease under conservative treatment is allowed to continue and obtain his result under sanatorium treatment alone with results which now average above 85 per cent. The patient, however, who does not do well or who develops complications or extension of his disease is subjected to collapse therapy of some type with eventual results which approximate the same figure. It is well to remember that some of these patients undoubtedly have reached the far-advanced class during the course of their disease but they are considered as moderately advanced because this was their admission diagnosis which they carry through their whole period of residence.

A study of this chart comparing the figures of 1933 and 1934 reveals a consistent unfavorable trend between the two years in every curve except that of the moderately advanced collapsed group, the exact cause of which cannot be stated at this time. Whether it represents an effect of the economic stress of the past few years or some other totally unrelated factor can possibly be determined only by further, more extensive study.

The results in the patients with minimal tuberculosis are not listed upon this chart. The number reporting for treatment is small and though the results are consistently good, an occasional bad result makes the curve very erratic and confusing because of the small numbers involved. Occasionally a patient admitted with minimal tuberculosis must be subjected to collapse therapy but the number so treated is not large.

From this study it is quite evident that collapse therapy has had a very beneficial effect in the treatment of pulmonary tuberculosis and that this effect has been most evident in the more advanced cases where help is more urgently needed. It is not to be accepted as a cure-all or used to the exclusion of constitutional treatment for tuberculosis but must be utilized with it if best results are to be obtained. Over-enthusiasm in the use of collapse therapy with neglect of the irksome but all-important constitutional treatment will inevitably sooner or later lead to disaster. The patient with pulmonary tuberculosis has no chances to throw away. He should not be deprived of any means which may contribute even slightly to his chance of recovery. The use of collapse therapy measures deserves the increasing support of the medical profession. When used carefully and intelligently, they become our most valuable weapons in the handling of advanced pulmonary disease. Their indiscriminate use, however, will not infrequently bring discredit to the physician and disappointment and disaster to the patient.

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A SIMPLE CLASSIFICATION OF PULMONARY TUBERCULOSIS

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FROM our experience with tuberculosis at various institutions, we feel that many general practitioners do not readily recognize the cases of tuberculosis for which institutional treatment is indicated. As a result, we receive, at the average institution for tuberculosis, several types of patients whose admission is, to say the least, questionable. These types may be divided into three classes: First, the patient may be too far advanced for any adequate therapy to produce arrest. Second, the patient may be only a contact and first infection type, and association with the open cases in the institution, is harmful. Third, when all other methods fail at home, the patient is ready for institutional care.

The purpose of this paper is to try to present a brief and simple classification which will show, with very little study, the dividing line between the institutional and observation cases. We do not mean to say that institutional therapy is essential for a cure, but when a patient is admitted to an

institution, it is much better for all concerned if the patient really belongs there. If the case appears to be a first infection type and the patient is returned home, the physician caring for the patient feels that this is a reflection on his reputation. The present custom is to hold these cases from three to six months for observation, returning them home after this period, as quiescent, while, as a matter of fact, their stay in the institution has not only been harmful to the patient but it has been costly to the state.

It seems essential that every case entering the institution should be diagnosed as tubercular before admission. A general physician feels that there must be lung destruction before admittance to a sanatorium, but, if this is awaited to determine the diagnosis, the case is usually moderately advanced or incurable. How, then, can the physician determine whether or not his patient is in need of institutional care? The following diagnostic outline is suggested:

1. Skin Test Positive	Skin Test Negative
2. X-ray Positive	X-ray Negative
3. X-ray Plus Secondary Infiltration	X-ray Positive
4. Incipient ABC	Far Advanced ABC

Moderately Advanced ABC

Let us follow a patient through these stages of tuberculosis. When a patient comes into your office, what procedure would you follow besides the history of contact? The first procedure is to do a skin test which will be either positive or negative. If negative, this shows there is no infection present. If the test is positive, it indicates that the individual has been infected with the bacillis.

The severity of the reaction, or the size of the reaction, does not show us the severity of the tuberculosis; the positive test means, only, that the individual is infected and does not necessarily mean that the case is an active one. (First Stage)

The next necessary step is an x-ray of the chest. It has been estimated that 50 per cent of positive reactors will show the pulmonary lesion, and the other 50 per cent to be glandular, mesenteric, cervical or mediastinal.

If the x-ray shows the apices clear with calcium deposits along the hilus, this indicates that the patient has the first infection which is healed and is only an observational case not considered active or dangerous to those coming in contact with the patient. This patient, however, should have frequent x-ray examinations, and if on subsequent examinations, extension or infiltration begin to show a spread into the parenychyma of the lung, usually apical, a re-infection is taking place and the beginning of the adult type of tuberculosis is present.

These cases with re-infection or infiltration into the parenchyma, do not usually present the symptoms associated with tuberculosis; in fact, the patient may feel in exceptionally good health. It is this case that we feel is an institutional one, or, if not institutional, the patient should be placed under therapy at home, taken away from his usual routine and placed at rest. If the lesion does not show signs of regression within a few months but advances into the fourth stage of the disease, some form of collapse therapy is usually indicated and should be immediately instituted. This takes place in the institution; it is seldom done in their individual homes. Naturally the exudative lesion gradually advances and becomes caseous if treatment is not thorough, and when extension is present in the other lung with much destructive pathology, then collapse therapy, although still applicable in some cases, is, as a rule, useless. Such a patient is usually admitted into the institution not for a cure, but merely to prolong life which will average from two to seven years, depending upon the resistance of the patient.

Thus, a patient becomes an institutional case when secondary infiltration shows itself in the lung, or when secondary infection or re-infection takes place. To admit a patient to the institution before this stage is a detriment to the patient, as the first two stages mentioned above are the primary infection and additional contact is harmful. Peculiar as it may seem, nothing is audible in the chest with a stethoscope in the first two stages. When re-infection takes place, as a rule, rales are not present at the beginning of the infection, some interrupted breath sounds or dim sounds are heard but not enough to make a diagnosis, hence the importance of the x-ray. When the fourth stage is reached, however, symptoms are present and in most cases, diagnosis can be made with a stethoscope.

At present, 99 per cent of the patients suffering from tuberculosis, reach the institutions in the fourth stage of the disease, and over 75 per cent of this group are in the late fourth stage, thus making arrests and cures a difficult problem for the physician to whom these patients are sent as a last resort. The one percent are first infection types.

The large number of fourth stage cases sent to the institution makes it difficult to secure the desired results in the treatment of tuberculosis, and

further, keeps many third stage cases from being admitted and given a chance of arrest and cure before passing into the fourth stage.

An earnest appeal is made to the individual physician to make an early diagnosis of tuberculosis; in order to give the patient the treatment indicated in the early stage of the disease, and then, and only then, will the mortality of this disease show a marked decrease.

As a rule, the physician that is trained in the diagnosis of tuberculosis does not come in contact with the patient first. Until the time comes when the general physician can make the diagnosis in its early stage, our institutions will be crowded with incurables.

THE FOOTBALL KNEE*

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THE knee joint is the largest and most exposed joint of the body, and, therefore, in a game where violent physical contact between the players is to be expected, it is the joint that most frequently receives severe injuries. The rules of the game have been modified as much as thought reasonable without detracting too much from the interest of the contest, to reduce this hazard to a minimum.

The purpose of this paper is to call particular attention to the two commoner major injuries to this joint, and to discuss briefly what can be done to salvage for further football service, players who have sustained such injuries.

In such serious injuries as damage to lateral ligaments or the crucial ligaments, there is no choice for the player but to quit until spontaneous repair has taken place, if it does occur. Rest, heat locally, and support do assist. There is no apparatus known that will allow a player to be used who has sustained one of the above mentioned injuries, and he might just as well, first as last, content himself with being benched for the rest of the season.

For minor strains and bruises, there is no question as to the value of well applied adhesive, but it is not this sort of injury that is being discussed in this paper (and it is the opinion of the speaker that there is no knee splint existing that will give sufficient support to a knee that will not at the same time detract too seriously from the efficiency of the individual to make it worth the candle). I have been told by a well known trainer that the principal value of so-called supportive apparatus for the knee is to wear it on the uninjured side in order to detract attention from the vulnerable region. The recently inaugurated rule that requires padding of the joint for protection of the adversary as much as the player, serves to conceal any appliance that may be worn.

The chief danger of a minor strain in a knee lies in the fact that it may be accompanied by a synovitis which causes the production of an exudate known commonly as water on the knee. A knee joint that has in its cavity more than the normal amount of fluid is a seriously weakened articulation, as the stabilizing atmospheric pressure of 15 pounds to the square inch tremendously reinforcing the capsule has been lost. Simultaneously there develops, usually, a diminution of tone of the muscles activating that joint which results in further instability and together with the excessive fluid predisposes the joint to a greater and more serious injury if scrimmaging is permitted while it is in this weakened condition.

Let me now mention the two major injuries already referred to. One is the production of free bodies by the chipping off of free fragments of bone covered by articular cartilage, and the other is damage to the semilunar cartilages which assist in the adaptation of the articulation of the tibia and femur to each other. The speaker has not found fractures of the patella a common lesion in football.

Osteochondritis dissecans is the technical name given to the condition that results in the scaling off of a chip of articular cartilage covered bone usually from the mesial aspect of the intercondylar notch. The body is usually oval shaped and about the dimensions of a fair sized lima bean. Very rarely there are two. It is because of the possible presence of this condition that X-rays should always be taken, as it is most important to know where the free body is, if present, before operating.

The commonest serious injury to the knee in football is, of course, internal derangement due to cartilage injuries. Unfortunately the coronary ligament which is the attachment of the cartilage to the capsule not frequently gives way allowing it to become caught between the gliding articular surface of the tibia and femur and torn in various ways, or actually dislocated into the intercondylar notch. This injury frequently occurs coincidentally with a ligamentous tear, which allows the separation of the femoral condyle from

*Presented at the Southern Section of the American Student Health Association, Atlanta, Ga., June 7, 1934.
†Shriners' Hospital for Crippled Children, Greenville, S. C.

the underlying tibial tuberosity. A vacuum is produced in the joint, and atmospheric pressure plays an important part in forcing the cartilage into the inter-condylar notch, like a wedge. When the brief, but severe, deforming force is released and the bones are allowed to return to their normal relationship, the cartilage gets caught in the notch and the capsule is ripped away from it. This, I believe, is one way that the coronary ligament is ruptured and is the commonest injury to happen in a knee which is predisposed by arthritis, which alters the viscosity of the synovial fluid. With this abnormal viscosity there is more chance for the cartilages to become caught between the gliding articulating surfaces and severely damaged. This lesion is a commoner one in civil life in an individual who has some slight arthritis and arises suddenly from an acutely flexed position of the knee. The cartilage is traumatized, as is a hand caught in a mangle.

The symptoms of internal derangement are first of all a sensation that the patient has something seriously wrong with the mechanical working of the knee and that it is abnormally weak and unstable, refusing to support any weight. Pain of an ill definable character usually beneath the patella and radiating to the location of the coronary ligament is present, usually of a very mild nature unless the joint is fully extended, when it is most severe, or less so, when flexed. Excess of fluid is practically always present except in those knees where the derangement is frequent and there has been little real trauma. There is usually, at least in a joint that has recently been injured, some tenderness over the damaged portion of the coronary ligament. The most frequent place is the anterior attachment of the internal meniscus. The feeling that something is wrong with the posterior portion of the joint is a frequent symptom and is difficult to explain except possibly on the basis that a dislocated cartilage puts an abnormal stretch on the posterior capsule.

Swelling depends on the amount of excess fluid within the joint and the damage to the capsule, and varies tremendously. The first derangement is accompanied, of course, with much more swelling than subsequent ones, which as in my own case, is not associated with any swelling at all.

In a primary dislocation, if it is recognized and reduced, the joint should be immobilized for one month while the coronary ligament is repaired. This practically is never done as the subsequent symptoms never persist long enough to make it necessary. The pain does not persist, and, when pain disappears, it is usually considered that the region has been repaired. Healing does take place, but in this instance healing is not synonymous with repair and subsequent dislocations, therefore, are prone to occur until a chronic condition exists that can be cured only by operation.

The operation is only indicated in the first derangement if dislocation is irreducible. In recurrent dislocations and when there are no other serious permanent injuries of a ligamentous nature, practically a normal knee may be expected after the removal of the offending cartilage in six months, or even less.

Needless to say, the operation must be done most meticulously, both as regards surgical technic and mechanical trauma. The opening of the joint and the danger of losing the "joint oil" has been relegated to the list of unwarranted superstitions. I have been using a light leg plaster for ten days, until the stitches come out, followed by an "Ace" bandage and then the treatment one would accord any severe strain of the joint.

It is conceivable that the pinching of the tabs of fat attached to the infrapatella fat pad can be a cause of internal derangement, but I have usually classified them as alibis to resort to in explaining an internal derangement when no pathology is found on arthrotomy.

I have had a somewhat unusual experience of being present at the inception of a cartilage injury and watching its subsequent history for twenty-six years in the case of one individual, and ten years in another. The former case is myself, and the latter a member of my wife's family. In my own case, I have learned to reduce the recurring dislocation with ease, while, in the latter, continual derangements have persisted for the reason that was evident at operation last year.

There is such a thing, I feel certain, as a hypermobile cartilage without evidence of trauma to the structure (except the relaxation of the coronary attachment). In operating on knees with a history of internal derangement, I would much rather find definite evidence of injury to the cartilage, as I have never felt certain that sufficient hypermobility existed to explain the symptoms and feared that I might be fooling myself in an unconscious attempt to establish an alibi.

The risk that is taken with a knee joint in allowing internal derangement to persist, I believe, possibly because of my own experience, is exaggerated. So often we are prone to advise our patients that an operation should be done at once, as damage will be done to the joint if the derange-

ment is allowed to continue. I feel that joint damage is done only if persistent pain and symptoms of derangement, and such as the permanent flexion deformity is present. For instance, in my own knee between attacks I never can recall which knee it is that is the offending one. In playing tennis, which I have continued to do, I am able, without difficulty, to finish a match if a dislocation occurs in the course of it. However, I am careful as soon as I feel the slipping to have taken place, not to bear weight on the joint until the derangement has been reduced. In my particular instance it is accomplished by acute flexion of the knee without any other maneuver. The reduction is audible enough to be heard across the court. It is never associated afterwards by an excess of fluid in the joint.

Strenuous manipulations of a joint with a cartilage dislocated, I feel sure, can result in unnecessary damage. Most primary dislocations will reduce themselves if the joint is put at rest, not immobilized, in the position of greatest relaxation. Sometimes floating the extremity in a warm bath will effect a reduction successfully. The development of excess fluid within the joint is one reason for the spontaneous reduction. It is conceivable that a reduction could be accomplished under an anaesthetic, but I believe a good deal of damage also could be done to a joint completely relaxed with the patient anaesthetized.

Summarizing, therefore, the chief cause of serious disability in a knee injury in football, is internal derangement due either to damaged cartilages (the inner much more frequently than the outer) or to the scaling off of a loose piece of bone which becomes a free body.

The treatment of this condition, i.e., internal derangement, where the condition is chronic is the surgical removal of the offending cartilage or free fragment with the rather definite expectation that the patient even in six months time may return to the scrimmage line. Injuries of the ligaments, serious enough to warrant surgical correction, in my estimation, do not belong in a paper of this sort, as the return to strenuous athletics in such an individual is impossible although much can be done to fit the patient with such an injury for a normal civil existence.

BOOK NOTICE

A NOTABLE BOOK ON HEALTH FOR THE LAYMAN

Healthful Living, by HAROLD S. DIEHL, M.D., with an introduction by MORRIS FISHBEIN, M.D.; first edition, cloth, 354 pages; New York City: The McGraw-Hill Book Company; 1935. Price, $2.50.

Doctor DIEHL, long a valued member of the editorial board of THE JOURNAL-LANCET, has done both organized medicine and the public a great service in writing this book, for it is simple, clear, honest, and direct. Much more could not be asked.

There are simple, accurate answers to many questions which of late have become fixed in the public mind with unparalleled tenacity. "Who can cure cancer?" "How much will smoking hurt me?" "Do I need to take Vitamin D, or do I get enough in my normal diet?" "What, if anything, can I do for a cold?" These common questions, and many more, are posed and answered by Dean DIEHL, and are presented in language sufficiently unobfuscated for any layman. Were every family to possess some such book as this, instead of the bulky old out-of-date "family doctor book," the outlook for improved health would be better than it is today.

A NEW WORK ON IMMUNOLOGY

Immunology, by NOBLE PIERCE SHERWOOD, Ph.D., M.D., with illustrations by ROSELLA BLOOD and others; first edition, heavy green cloth, gold-stamped, 566 pages plus bibliography and index; St. Louis: The C. V. Mosby Company; 1935. Price, $6.00.

DR. SHERWOOD, who is professor of bacteriology in the University of Kansas, and pathologist to the Lawrence Memorial Hospital in Lawrence, Kansas, set himself to the preparation of this weighty volume with others in mind than the general physician. He desired it to be accessible to students of bacteriology as well as medical students, and one resultant characteristic is the abundance of definitions which the work contains.

Originally in use in the Universities of Montana and Kansas in mimeographed form, Professor SHERWOOD's book is a formidable text. He has included a chapter on colloids, and a very fine section on hypersensitiveness. Every laboratory test which the physician must understand and occasionally attempt, is contained in this book. The illustrations are in the main clear and delineative, although those produced by Miss ROSELLA BLOOD are not noteworthy.

Immunology, although primarily intended for students, is a splendid work for the shelf of any general practitioner, rendered especially valuable because of the great mass of material instantly available. It has a copious bibliography.

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The Minnesota Academy of Medicine
The Sioux Valley Medical Association
Great Northern Railway Surgeons' Assn.
American Student Health Association
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PRACTICAL PROTEIN CLASSIFICATION

One of our valued Wisconsin subscribers writes "Do you believe a hunting dog actually smells the game, or the blood hound smells his quarry? I have given this a lot of thought and considerable observation during the last few years, and believe a dog follows the scent by nasal reaction to proteins; he sniffs around the rim of a track where the body scales drop. Wouldn't it be interesting if human proteins could be classified as blood is typed, and a photoelectric arrangement could be devised to detect the proteins of bank bandits when contacted to spots where the bandits stepped? . . . something to think about . . ."

Interesting to the point of fascination because it has all the earmarks of a creative thought. Both Holmes and Semmelweis were ridiculed when they advanced the theory that puerperal sepsis was carried by the obstetrician's hand; now it is an undisputed fact. We have learned much about the transmission of disease by intermediaries since then. We are just becoming air minded now and suspect that the last word has not yet been written on the subject. Various insects have become recognized as pathogenic agents as in the case of malaria. Tubercle bacilli ride on particles of dust. Pollens and dandruff carry out their nefarious designs through aerial attacks. It is not a far fetched hypothesis then that human proteins will some day be classified for practical application. A. E. H.

MENTAL DISEASES AND THE CHIROPRACTORS

In recent issues of various newspapers in states bordering on North Dakota there have appeared accounts of an annual meeting of the chiropractors. One of the speakers at that meeting praised very highly the alleged curative effects produced by that cult in the treatment of nervous and mental diseases.

It would be interesting to learn: (1) to what extent that particular orator was financially interested in the so-called chiropractic psychopathic sanitarium; and (2) what positive proof can be adduced as to the permanent cure of, for instance, such diseases as dementia praecox, syphilis of the nervous system, insanities of involution, *etc.* These claims, seen not only in newspapers, but also in magazines, may be just about as untruthful as an advertisement regularly appearing in one of our town telephone directories, which described the alleged merits of a chiropractor who claimed that he was "admitted to all North Dakota hospitals"—which of course is a choice piece of fiction, to use a mild phrasing.

In regard to the several cases of mental disease which the North Dakota chiropractors arranged to have sent into another state for treatment in a psychopathic sanitarium of that cult, we hope soon to obtain accurate data as to the results of the manipulations. We understand, at this writing, that several of the cases have been

returned to this home state without exhibiting signs of any marked improvement.

Insofar as our own State Hospital for the Mentally Afflicted is concerned, we have had the privilege of going over the records. They yield the following information, based on the first year (ending July 1, 1935) of the current biennium, *viz.*:

July 1, 1934—In hospital	1,734
July 1, 1934, to July 1, 1935—Received into hospital by new admissions....	395
July 1, 1935—Now remaining in hospital	1,783
A gain of	48
During the year: Deaths among the year's admissions	52
During the year: Discharged as restored	298
Or 75 per cent of those admitted.	

Note: The rate of recovery as listed above remains about the same thus far into the current year. Not all those who are discharged are entirely normal in their mental reactions; yet, they are sufficiently recovered to be capable of going out to make their own way without depending upon the county for the expenses of their keep.

A. W. S.

IS SOCIALIZED MEDICINE THE ANSWER?

A young social worker recently interviewed a physician regarding a patient who was in need of financial assistance. This worker was very enthusiastic about the work and was desirous of doing everything possible to help the client. When all the desired medical information regarding this patient was obtained, this worker asked a number of questions about medicine. When told that all communicable diseases could be controlled if the co-operation of the public was secured, the social worker launched upon a rather lengthy condemnation of organized medicine, emphasizing particularly what was termed "a damnable attitude" of one man in the offices of the American Medical Association who has led every recent campaign against the socialization of medicine. It was stated that the American public would soon be relieved of the communicable disease problem if socialized medicine could be put into practice, so that everyone would have the advantage of what is known in disease control and prevention.

Evidently this young worker had not been informed about the well organized groups devoting much time and expending a great deal of money to oppose the practice of public health measures. When asked how all of the advantages of medicine would be brought to each individual in the nation, the reply was that if medicine could be socialized, each person would have these advantages without financial consideration on the part of the individual. This person did not realize that these advantages are already available in this country and that only a small percentage of the people avail themselves of them. Attention was called to a recent relief project arranged through a medical society in a city where approximately 80,000 persons on relief were given printed forms which they could take to the physicians of their choice and be immunized against diphtheria, smallpox, and typhoid fever, without any charge to them or any reduction in their relief allowances. None of these individuals were working and none were residing far from a physician's office, and although this opportunity was extended over approximately *three* months, only *nine to ten* thousand took advantage of it. What more could socialized medicine do than to offer such service as the relief organization did?

It was pointed out that the most urgent need is to break down the opposition to good health measures and teach the public everywhere the well-established facts concerning the control and prevention of disease and that social service workers would accomplish much more for humanity by launching a campaign in that direction than by opposing the medical profession, whose members are, after all, the only highly trained group in health matters.

The reply to a few questions led one to believe that in the course this social worker had recently taken very little that had been taught about control of disease but much emphasis had been placed upon criticism of the medical profession. Moreover, there had been little or no teaching to the effect that physicians in private practice are in a position to make available to their patients all preventive measures and that the poor receive the same consideration as those who are able to pay for their services. No consideration had been taken of the fact that the physicians on many tax-supported hospital staffs devote a great deal of time to the care of the poor without any financial remuneration whatsoever and that the services contributed by physicians if standard fees were charged would amount to many thousands of dollars annually in a good many public hospitals in this country.

During a campaign for a charity fund in a small city, a computation was made of the value of the free services given by the physicians of the city to the general hospital. It amounted to the astonishing sum of half a million dollars annually.

By the time the conversation was finished, this social worker admitted that there are many phases of the problem which had not been presented in the course recently taken and that socialized medicine will not solve the problem.

J. A. M.

VENEREAL DISEASE INFORMATION

A very valuable little pamphlet is that bearing the above title and issued monthly by the United States Public Health Service, for use in its co-operative work with the State Health Departments. Through the courtesy of Senator Shipstead it is received regularly, without charge, by the Hennepin County Medical Society, but it is available to the profession at large at a subscription price of only fifty cents a year, through the Superintendent of Documents, Washington, D. C. Each issue contains about thirty-five pages consisting of terse editorials (usually not more than two or three) and the rest is made up of short abstracts of articles concerning venereal disease and its sociological aspects from professional journals in all languages, under the general supervision of Dr. R. A. Vondelehr, Assistant Surgeon General and Chief, Division of Venereal Diseases, U. S. Public Health Service. In the August issue are editorials on Lymphogranuloma Inguinale (Poradenitis), which we shall comment on elsewhere, and on the Evaluation of Serodiagnostic Tests for Syphilis in State and Local Laboratories. The abstracts are grouped under the headings of Public Health Administration, Laboratory Research, Pathology, Diagnosis and Treatment, so that it will be readily seen that a wide field is covered and it is done in a very competent way.

We feel prompted to call attention to this publication because it is so little known, in spite of the fact that it is now in its sixteenth year of issue. Being a Government publication it carries no advertising and is put out at cost. It is purely for the profession and primarily for the service which issues it. But it is cordially recommended to those who want to keep in touch with the advances in the study of venereal disease, at a nominal cost.

G. C.

PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of October 9, 1935.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club, St. Paul, on Wednesday evening, October 9, 1935. The President, Dr. A. R. Hall, in the chair.

There were 56 members and one guest present.

Dr. J. M. Armstrong read the following Memorial to Dr. C. Naumann McCloud.

Dr. Charles Naumann McCloud, a member and former president of this Academy, died of tularemia, August 13, 1935. To have known him provides sufficient evidence that no eulogy of his life need be pronounced. First and foremost, he was a gentleman, a lovable companion, and a loyal friend. His family life was a particularly happy one and no trace of misconduct marred his career as a husband and father or in his relationship with his fellow men. As a general practitioner, he was a sympathetic advisor and able counselor. He had the respect of his confreres and was loved by all who knew him.

Dr. McCloud was born in St. Paul, February 9, 1872. He received his preliminary education in the Public Schools and at Macalester College, and obtained the degree of Doctor of Pharmacy from the University of Minnesota in 1895. In 1901 he was graduated from the Medical Department of the same institution. He was intern at the City and County Hospital the following year, and was Assistant City and County Physician in 1903.

In 1903 he became associated with the Minnesota Mutual Life Insurance Company, as Medical Referee, and was advanced from time to time until he became Medical Director in 1908, and Vice-president of the Company in 1934. He retired from general practice in 1933 to devote his entire time to his insurance work.

Dr. McCloud was President of the Ramsey County Medical Society in 1920, and was a member of the State and American Medical Associations, the Association of Life Insurance Medical Directors, and the American Life Conventions, having served as chairman of the Medical Section of the latter organization. He was a member of the staffs of St. Luke's and the Charles T. Miller hospitals.

In addition to his professional associations, he was a member of the Masonic order, the Minnesota Club, the Theta Delta Chi and Nu Sigma Nu Fraternities, and of St. Clement's Episcopal

Church; to all of which organizations he gave his devoted and generous support.

On October 18, 1904, Dr. McCloud was married, in St. Paul, to Miss Agatha de Lambert, who survives him. Of their two sons, David M., a graduate of Harvard, is an attorney in Dallas, Texas; and the younger, Charles Naumann, Jr., a graduate of Princeton, is attending the University of Minnesota preparing to follow his father's profession.

The Committee: J. M. Armstrong,, M.D.,
F. E. Burch, M.D.,
H. W. Cook, M.D.

The scientific program followed.

ACUTE ATROPHY OF BONE

Report of an Unusual Case Involving the Radius and Ulna

M. S. Henderson, M.D.
Section on Orthopedic Surgery
THE MAYO CLINIC

Abstract

Acute atrophy of bone is a definite clinical entity distinct from the chronic atrophy of bone that follows disuse, and is commonly seen in the extremities and in the spinal column. The lower extremity is affected more often than the upper, and atrophy is usually limited to the bones of the foot, although the lower end of the tibia and fibula may also be involved. There is frequently an initial injury, although atrophy may develop spontaneously. Such injury is usually slight, a simple twist, a blow, or a bump, and there ensues a latent period which varies in length and may last a few days to a few weeks, although when the spinal column or long bones are involved it may extend into months. The signs vary according to the site of the disease. In the upper extremity the condition is manifested usually in the bones of the hands and wrists, and is more often seen following a severe injury, such as a fracture, than is the case in the lower extremity. Edema, cyanosis, and atrophy of the skin are the common objective signs, and pain and soreness the subjective. Wasting of muscle is commonly seen. In the lower extremity the disease usually lasts over a period of months, but it may last several years and cause total disability in the extremity affected.

The radiological findings are more or less typical. There is no alteration in the form but a diminution in the density of the bone. The roentgenogram discloses a moth-eaten appearance of the bones involved during the acute stage but, as the condition becomes more chronic, this moth-eaten appearance disappears. The spongiosa become wide meshed and the lamellae are thicker and stronger, but chiefly the longitudinal fibers. The prognosis is good although the disease may last from a few months to several years.

Treatment consists of heat, contrast baths, massage, and active and passive movements, the former being by far the most important. Use to the point of toleration of the affected limb is indicated. Supports and braces and casts are contraindicated, as are manipulations, particularly under anesthesia. Leriche of recent years has advocated ganglionectomy and has reported cases showing its usefulness, but it seems rather a heroic measure for a condition that responds so well to conservative measures.

In 1925 Noble and Hauser reported from the Mayo Clinic forty-eight cases covering the period from 1912 to 1924. I reviewed the Mayo Clinic files from 1930 to 1934 and found fifty-five additional cases. In eight of these acute atrophy of the bone occurred in the hand and in forty-seven in the foot and ankle. In eighteen of the forty-seven cases in which the foot and ankle were involved, there was a definite history of trauma. In those cases in which the onset was sudden and without trauma, the duration of the disease was longer and they did not respond so well to treatment.

The case reported was an unusual case of atrophy of the bone of the radius and ulna following a mild injury. The patient came to the Mayo Clinic two years after the onset and in that time there had been one exploration of the bone with negative findings. There had been a pathological fracture of the ulna in the upper third and of the radius in the upper third, both fractures coming on during some slight movement. The findings at the time of the examination in the clinic in October, 1925, disclosed pathological fractures in with bones with extreme atrophy and almost complete disappearance of the ulna in its entirety, the radius also showing atrophic changes. The patient was under observation for eight months and the atrophy continued. Several times three to four ounces of clear serous fluid was withdrawn with an aspirating needle. Guinea pig inoculation tests for tuberculosis were negative. Finally, the arm was operated upon, massive bone grafts being applied at one time to the ulna and later to the radius. The radius completely regenerated and the ulna partially in the lower two-thirds. Amputation had been advised, and the bone grafting operations undoubtedly saved the arm. The elbow at present is a poor elbow, being somewhat flail, but the hand is normal and the patient reports now, ten years after the operation, that he does practically everything and has no discomfort.

There is no adequate explanation as to the etiology. The probabilities are that the acute atrophy of the bone is due to a trophoneurosis partially explainable on the theory that reflex irritation and stimulation of the trophic nerves produces an increase in the metabolism of the tissues and that for some unknown reason the calcium is carried away from the bone.

Discussion

Dr. A. R. Colvin (St. Paul): In discussion of Dr. Henderson's paper, I should like to show some x-ray films of a case very similar to the one he reports. The films are of the radius of a young woman, 23 years of age, a nurse at the City Hospital. She attributed her trouble to having lifted a heavy sterilizer lid and was

said to have had a green-stick fracture. This was about a year before I saw her in 1925. She complained then of severe and constant pain in her arm, though objectively there was nothing to be made out. The radiograph showed a mere washed-out shadow of the radius, the bone being about the normal size, however, and so presenting the appearance of eccentric atrophy. She complained so bitterly after awhile that I reluctantly consented to explore the bone, hoping that this might afford some relief. The wound healed quickly but there was no relief of pain. The tissue removed showed some exceedingly fine trabeculae and a rather loose fibrous tissue replacing the medullary tissue; not, however, being exactly like osteitis fibrosa. There was no excess of fatty tissue in the medullary cavity as is so often seen in the acute atrophy of bone in the neighborhood of inflammatory lesions. The patient went shortly to another hospital and there was treated with diathermy, with no relief. The second film, taken one and a half years later than the first one, shows a more advanced atrophy.

The decalcification of bone seen in hyper-parathyroidism can be excluded here by the pathological findings both macro—and microscopically. The decalcification here is simply part of the bone atrophy in general. Bone atrophy is a very important subject, especially since the advent of the x-ray. In the early days of radiography, confusion sometimes arose. One of my early confusions was what seemed to be a cavity in the head of the humerus in a case of chronic subdeltoid bursitis. In this case the supposed cavity represented a very atrophic condition in which the medullary and spongy tissue of the head was replaced by fatty tissue; this being so marked at times that the condition is spoken of as lipomasia. An extremely acute bone atrophy is seen in the carpal and tarsal bones in acute arthritis of the carpal and tarsal articulations. Here the bones are surrounded by multiple acute arthritis and atrophy is sometimes so pronounced that osteomyelitis has been confused with the clinical condition. It is said that acute gonorrheal arthritis is accompanied by the most marked atrophy. It is difficult to classify the atrophy in the case I have shown; decalcification is present only as an accompaniment of the general atrophy. Acute inflammation as a cause was absent.

We have had 25,000 cases of fracture at the St. Paul City Hospital in the last ten years and no atrophy of this kind has been seen.

Sudek theorized as to the neuropathic nature of acute bone atrophy but it would seem as though we are still in the dark in cases of the kind reported.

Dr. Henderson (in closing): I wish to thank Dr. Colvin for his discussion. His case appears to be very similar to the one I am reporting but, fortunately, only one bone was involved. Atrophy of the bone occurs more commonly in the foot and ankle and the usual story given by the patient is that he has bumped his ankle or foot against some object and did not pay much attention to it, but that in a few days the foot became sore and he began to limp. When it comes to treatment, the worst thing that could be done is to put the affected part at rest in a splint or cast. These patients should be encouraged to use the foot to the point of toleration. Industrial cases are slow to recover, much slower than the case of a man on the farm who is receiving no compensation. The treatment should be conservative and should consist of physical therapy with the institution of active and passive movement, heat and gentle massage. The prognosis is good, but the length of time before full recovery takes place varies, in the foot, from six months to one and one-half years.

SPINAL CORD INJURIES

E. M. Hammes, M.D.
ST. PAUL

Abstract

Spinal cord injuries, similar to brain injuries, are occurring in rapidly increasing numbers, due particularly to high speed automobile accidents. During the past four years 154 cases of fracture of the vertebrae (cervical 51, dorsal 36, lumbar 67) were admitted to the surgical service at the Ancker Hospital, a fairly large percentage presenting neurological symptoms of variable degree. To these must be added the cases of spinal cord injury without fractures, such as spinal concussion, hematomyelias, and penetrating wounds.

Spinal concussion is a definite clinical entity as has been clearly pointed out by Gordon Holmes in his studies during the World War. The hematomyelias are more prone to manifest themselves in the gray matter of the spinal cord, the incomplete transverse lesion develops very suddenly, and the prognosis is usually more favorable than the acute clinical syndrome warrants. Surgery is contraindicated in concussion and hematomyelia, but therapeutic spinal drainage may be of benefit.

The subdural hematomas rarely occur in pure form and are usually complicated by an hematomyelia or cord trauma. Fracture dislocation of the vertebra with associated spinal cord injuries present a varied syndrome depending upon the level of the lesion and the extent of the trauma to the cord. Laminectomy is definitely indicated in only a small percentage of this group, for most cases will improve as much with conservative treatment as with surgical intervention.

Among the delayed manifestations of spinal cord and root involvement due to vertebral traumas, Krummell's post-traumatic spondylitis and the herniation of the nucleus pulposus are the most frequent. Orthopedic measures in the first, and surgical removal of the nucleus in the second group, offer the best outlook for recovery.

Cases of spinal concussion, hematomyelia, fracture-dislocation with cord injury, and so forth, are reported.

Discussion

Dr. George N. Ruhberg (St. Paul): Dr. Hammes has covered such a wide field that it is difficult to adequately discuss it. I would reiterate the importance of x-rays in all spinal injuries. Occasionally unsus-

pected and surprising things are found. Sometimes the obvious injuries, such as bruises, cuts, etc., draw the entire attention of the attending physician and only later with x-ray studies are fractures of the spinal column found.

Referring to Dr. Hammes' case of hematomyelia involving the arms, this brings to my mind a friendly difference of opinion regarding the case. I saw this young lady quite some time after she left the hospital and at that time it appeared to me to be a predominately peripheral paralysis involving the left upper arm and shoulder. In view of that picture and the subsequent course I am still of that opinion. This case also illustrates the value of time in coming to a conclusion about the ultimate prognosis in nerve injuries.

Dr. M. S. Henderson (Rochester): I am very much interested in the cases which Dr. Hammes is reporting. They are a trying lot of cases to treat. The hematomyelia group are the ones that do make improvement and sometimes attain full recovery. I recently heard of a way of applying skeletal traction to the high cervical fractures advanced by Dr. Claude C. Coleman of Richmond, Virginia. He devised special tongs which are inserted in little holes made in the outer layer of the skull and in that way firm and steady traction is maintained. We are all well acquainted with the extreme difficulty that we have in maintaining traction in cervical fractures by aid of some form of cloth or leather halter. They are not only inefficient but very uncomfortable. Skeletal traction is the ideal form of traction and if it can be used safely in this manner it will bring comfort to both patient and surgeon.

Dr. F. R. Wright (Minneapolis): It seems to me that the most remarkable case presented by Dr. Hammes was the one which, following an injury of the neck, had a paralysis of both arms with normal motion and sensation in the lower part of the body. The injury must produce local damage in the cord similar to that in poliomyelitis which attacks one group of nerves. Professor Jones, of Liverpool, states that, following an attack of poliomyelitis, the fibers in the nervous degenerate and that when repair takes place these fibers regenerate at the rate of approximately an inch a month. It would seem to me reasonable that regeneration following a localized injury in the cord should take place approximately in the same manner and in the same time. Since Dr. Hammes says that she recovered in 13 months, either complete degeneration of the nerve fibers did not take place, or regeneration occurred more rapidly than in a case of poliomyelitis.

In this connection I would like to report a case. Within the last thirty days I have called to see a man who about three years ago was thrown from a horse and his back injured. Dr. Geist did a laminectomy on him. Following this operation he recovered so that he was able to walk around his farm. About a year ago he developed a perinephritic abscess which was drained, and still drains. He has been in bed practically ever since. When I first saw him he was lying in bed and looked perfectly well. I asked him if he was paralyzed and he said no; but on examination there was only 15 per cent to 20 per cent motion in the legs. The skin from the knees down was pale, soft and smooth and had the feeling of fine Morocco leather. In spite of the fact that he is a hairy individual, every hair below his knees has disappeared. This man has a slowly ascending atrophy of the skin as a late result of this cord injury.

Dr. Hammes, in closing: I wish to thank the members for their kind discussion. In reply to Dr. Ruhberg's diagnosis that the patient with bilateral upper extremity paralysis might be due to a brachial neuritis, I cannot conceive how a person, receiving a sudden blow to the back of the neck and immediately following it develop a motor paralysis of both upper extremities, could have a traumatic neuritis. The fact that the electric reaction was one of degeneration in the paralyzed muscles does not speak against a lesion in the anterior gray matter in the cervico-dorsal region. An electric reaction of degeneration does occur whenever any part of the lower motor neuron is involved. This extends from the anterior horn cells to the motor end plates.

REFLEX URINARY FREQUENCY

F. R. Wright, M.D.
MINNEAPOLIS

Dr. Wright reported a case of reflex urinary frequency. (Complete report in October, 1935, issue of Urologic & Cutaneous Review.)

Abstract

Mrs. S. came to me on January 8, 1935, complaining of frequent urination and a heavy feeling of pressure in her pelvis.

The patient is 36 years old, weighs 140 pounds, has always been in good health, is married and has two children, age 13 and 11 years, both deliveries being normal. One years after her second child was born (that is, ten years ago), she began to have a feeling of weight and pressure in her pelvis accompanying her menstrual period. At the same time she developed a leucorrhea. These pelvic symptoms have increased during the last few years until the pressure pain in her pelvis during her menstruation has become almost unbearable and the leucorrhea has increased so that she is compelled to wear a napkin most of the time. Menstrual flow is normal and unaccompanied by any pain or distress.

About four or five years ago she began to have a colicky pain in the region of the umbilicus. This pain was referred from the umbilicus to the rectum. These attacks of umbilical pain have occurred every few months but have not been of long duration, 15 or 20 minutes, though severe enough to compel her to leave her work and lie down.

On January 2, 1935, the patient had an attack of umbilical pain which lasted only about ten minutes. On January 6th she began to have a frequent urination, increasing in severity until on January 8th, when I first saw her, she was voiding her urine every 30 minutes, day and night. She was having so much pain and pelvic distress that I did not undertake to make a pelvic

examination and was unable to obtain a specimen of urine. Her temperature was 98.6°, pulse 80.

At this time she was given a sedative, told to take prolonged hot douches, and to come and see me again in a day or two. She returned on January 11th. The pain was less severe but she was still voiding at very frequent intervals. Temperature 98.6°, pulse 80.

At this second visit a pelvic examination was made but nothing pathological could be detected. The uterus was in normal position, there was no thickening or tenderness in the region of the tubes. At this time I examined her abdomen and found a very slight tenderness on deep pressure in the region of McBurney's point. There was no muscular rigidity or spasm. She denied ever having had any pain in her abdomen except the colicky pain in the region of the umbilicus, and stated that never at any time had she had any soreness or tenderness in the region of McBurney's point.

A diagnosis of exacerbation of a chronic appendicitis was made and operation advised.

She entered the hospital on January 14th and was operated on the 16th. In the hospital her temperature was 98°, pulse 80, respiration 20, white cell count 10,600. The urine was reported to be hazy and contained a moderate number of pus cells. She was operated through a median incision. Pelvic examination showed the uterus, tubes and ovaries to be normal. A retrocecal appendix 6 cm. long was removed. Laboratory diagnosis: Subacute appendicitis.

The only local treatment received during her stay in the hospital was irrigation of her bladder on the 3rd and 5th days with a hot 1-3000 permanganate solution. The patient left the hospital on the tenth postoperative day, free from all pelvic symptoms.

I did not see her again until about five months after her operation. When I asked her how she was feeling she said she was in perfect health and added that not only her bladder symptoms but also all of the feeling of pain and pressure which had accompanied her menstrual periods for ten years as well as the leucorrhea had disappeared.

Discussion

Dr. A. E. Benjamin (Minneapolis): I think we all have seen cases such as Dr. Wright reports. I recall a patient I operated on who could not go fishing because, if he did, he would usually have a pain in his abdomen. He also had albumin in the urine and could not get insurance. We removed his appendix, after which the albumin disappeared from his urine.

In cases of dysmenorrhea, often the symptoms are reflex or associated with an appendix attached to a tube or ovary. I have seen cases where the appendix was attached to the bladder; also where it was found fixed over the ureter, which resulted in pus in the urine.

Dr. Wright, in closing: I might add that I had a brother who for years had a backache. He finally went to Dr. Geist who went over him thoroughly and said the only thing he could find wrong was a slight tipping of his pelvis, the right side being lower than the left. He gave him a pad one-half an inch thick to wear in the heel of his right shoe. This improved, but did not entirely relieve, his backache. He wore this pad for ten years when he was awakened in the night with a pain in his abdomen and before morning his appendix, which had never before bothered him, was removed. Much to his surprise when he got up and around his backache had disappeared, never to return.

The meeting adjourned.

R. T. LaVake, M.D.,
Secretary.

NEWS ITEMS

Dr. Phillip H. Woutat, Grand Forks, was married to Miss Helen Louise McIntosh, of Cavalier, N. D.

Dr. G. W. Dahlquist and wife of Lancaster, Minn., are spending the winter months in Vallejo, California.

The local hospital at Hettinger, N. D., under charge of Dr. M. F. Williams, has been indefinately closed.

Dr. O. R. Purtzer, New Ulm, Minn., is in Los Angeles, where he will spend several weeks in post-graduate work.

Dr. G. D. Gilbert has returned to Maynard, Minn., after an absence of five years, and will resume general practice.

Dr. A. L. Arends, Askov, Minn., is spending several weeks at the University of Minnesota, taking a post graduate course.

Dr. L. C. McLaughlin, Minneapolis, has become associated with Dr. H. E. Jenkinson, Wessington Springs, S. D., in general practice.

Dr. F. J. Hirschboeck, Duluth, was elected president of the Minnesota Society of Internal Medicine, at its recent annual meeting held at St. Paul.

Dr. A. E. Hedback was the guest speaker at the November meeting of the Minneapolis Business Forum, with an address on "Does Life Begin at 40?"

The Washington County Medical Society held its monthly meeting at Stillwater, Minn., with Dr. E. T. Herrman, St. Paul, presenting a paper on "Diabetes."

The Forty-fifth annual meeting of the Western Surgical Society, will be held at Rochester, December 6-7, with an interesting program for the two days sessions.

Dr. Carl Voss, one of the pioneer physicians of Hettinger, N. D., has retired from practice and

is already on his way to Europe, where he will make his permanent home.

Dr. P. E. Brandon, who has been in active practice at Sioux Falls, S. D., during the past twenty years, has become associated with the Clinical Institute of that city.

Dr. Elton Clothier, Westfield, Wis., has purchased the practice and equipment of the late Dr. G. E. Page, Elk River, Minn. The doctor is a University of Minnesota graduate.

Dr. Irving S. Cutter, dean of the Northwestern Medical School, Chicago, will be the guest speaker at the annual meeting of the St. Louis County Medical Society, at Duluth, December 12.

Members of the Medical Society of Blue Earth, Minn., held its November meeting as usual with Dr. C. N. Hensel, St. Paul, as the principal speaker, presenting a paper on "Internal Medicine."

Bemidji, Minn., held an "Open House" at the Lutheran Hospital last month, as they have recently completely modernized it, making it one of the leading hospitals in that section of the state.

Dr. John M. Rains, who was active in the practice of medicine for over 50 years at Willmar, Minn., died at his home at the advanced age of 85 years, the result of a heart ailment of many months.

Dr. M. C. Petersen, assistant superintendent of the St. Peter state hospital since January 1, 1928, has been named superintendent of the Willmar state asylum by the Minnesota Board of Control.

Dr. E. M. Sorensen, member of the Bratrud Clinic, Thief River Falls, Minn., returned November 1st, after four weeks post graduate work in pediatrics at the Washington University, St. Louis, Mo.

The Twin City Society of X-Ray Technicians held its annual meeting at St. Paul last month, with many prominent speakers on the program. Miss Veronica Schneider, St. Paul, is president of the society.

Dr. Fairley is an outstanding British investigator and an international authority on tropical medicine. He came to the United States to be the guest speaker at the meeting of the American Society of Tropical Medicine, in St. Louis.

Dr. F. M. Pottenger, Los Angeles, widely known writer, as well as an organizer in tuberculosis work, will address the members of the Hennepin County Medical Society, at their auditorium on the evening of December 4.

Members of the 1935 summer staff at Camp Grassick, N. D., with Mrs. Dr. E. P. Quain, Bismarck, president of the North Dakota Anti-Tuberculosis Association, had an informal breakfast and reunion at the camp on November 8.

Dr. N. Hamilton Fairley of London will present a Mayo Foundation lecture Monday evening, November 25, in Plummer hall. He will have as his topic, "Tropical Diseases as They Affect the Practice of Medicine in the Temperate Zone."

The Minnesota State Sanitary Health officers held its annual meeting at St. Paul on November 15th, with over one hundred members present. Dr. A. W. Jones, Red Wing, is president; Dr. C. O. Wright, Luverne, vice president, and Dr. A. J. Chesley, Minneapolis, secretary.

Dr. Charles E. Cotton, Minneapolis, who for more than 40 years has been a leader in a statewide program of tuberculin testing and elimination of diseased cattle, was honored at a dinner meeting of the Minnesota Public Health Association Friday evening, November 22.

Dr. J. S. Almas, who had practiced in Havre, Montana, for forty-three years, died on November 6, at the University Hospital, Minneapolis, following an operation for intestinal obstruction. Dr. Almas graduated from the University of Toronto in 1891 and was seventy-three years of age. He had been engaged in active practice until three weeks prior to his death.

Dr. J. A. Myers, Minneapolis, was the guest speaker at the following meetings last month: November 8, the Michigan Tuberculosis Association at Lansing, and the students body of the University of Michigan at Ann Arbor, Michigan; November 13, at the Wesleyan University, Delaware, and the 14, at the State Health Officers Association at Columbus, Ohio.

The Minnesota State Medical Association broadcasts weekly at 10:00 a. m. every Monday, over Station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters). Speaker: William A. O'Brien, M. D., associate professor of Pathology and Preventive Medicine, Medical School, University of Minnesota. The program for the month will be as follows: Dec. 2, "Parents and Children"; Dec. 9, "Growth Disturbances"; Dec. 16, "Swallowing Difficulties"; Dec. 23, "Fighting Tuberculosis"; Dec. 30, "1935, Medically Speaking."



If this tired, worried, over-worked mother were using Pablum for her babies' cereal feedings, she could have slept that extra much-needed hour instead of losing her temper while her children clamor for breakfast. For she can prepare Pablum in an instant, directly in the cereal bowl, simply by adding water or milk of any temperature—salt, cream and sugar for the older child and herself.

GETTING up an hour earlier in the morning is an inconvenience for most persons, but for the mother of young babies it is a hardship, sometimes almost tragic, frequently nullifying the best-planned pediatric advice.

This is especially true in the case of the nursing mother whose supply and quality of breast milk are affected by emotional shocks resulting often in agalactia and sometimes giving rise in the baby to diarrhea, colic, and even convulsions. Furthermore, the mother's emotional stress brings about a train of behavior on her part which is reflected in the child's psychologic reactions so that a vicious circle of bad habit formation is set up.

From this angle, the recent introduction of the pre-cooked form of Mead's Cereal, known as Pablum, assumes new importance in the doctor's psychological handling of both mother and child, quite aside from its nutritional value.*

Because Pablum can be prepared in a minute, the mother can sleep the extra hour she would otherwise be compelled to spend in a hot kitchen cooking cereal. Added rest means better poise, so that petty annoyances do not bring jaded nerves. Prompt feedings prevent many childhood tantrums, and a satisfied baby usually eats better and enjoys better digestion and growth.

*Like Mead's Cereal. Pablum represents a great advance among cereals in that it is richer in a wider variety of minerals (chiefly calcium, phosphorus, iron, and copper), contains vitamins A, B, E, and G, is base-forming and is non-irritating. Added to these special features, it is adequate in protein, fat, carbohydrates, and calories. Pablum consists of wheatmeal, oatmeal, cornmeal, wheat embryo, yeast, alfalfa leaf, beef bone, iron salt, and sodium chloride.

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A Study of the Leucocyte Reaction in Pulmonary Tuberculosis*

Sumner S. Cohen, M.D.
Oak Terrace, Minn.

IT HAS been recognized for many years that infection with the tubercle bacillus led to certain changes in the leucocytes of the peripheral blood circulation. The exact nature of these changes and their significance has led to some controversy. Writers, in the literature up to about 1925, expressed opinions and conclusions which were often contradictory. The lack of uniform results was in part caused by differences in interpretation and identification of the various leucocytic cell types, as well as the absence of satisfactory facilities, to complete the correlation between the blood picture and the clinical condition of the patient. In the later years, increasing uniformity of cell interpretation and more accurate clinical examination, especially by means of serial x-rays, has led to greater reliance upon the blood findings. The work of Medlar and coworkers[1 2 3 4 5 6] beginning with reports published in 1926, has done much to clarify the interpretation of the entire leucocytic picture as it relates to pathology caused by the tubercle bacillus.

Literature

The older literature is voluminous and somewhat confusing for the reasons mentioned previously. However, Ullom and Craig,[7] Wright and King,[8] Solis-Cohen and Strickler,[9] Miller and Reed,[10] and Cummings[11] emphasize many of the blood changes which are the result of tissue damage caused by the tubercle bacillus. The interpretation of these authors differs, however, in some respects from present views. These differences in many cases were due to failure of identification of the large mononuclear leucocyte or monocyte. The almost regular increase in neutrophiles was recognized, but was thought to be due to secondary infection superimposed on the tuberculous process. This latter point is still under debate.

Medlar presents an acceptable conception of the relationship between the various leucocytes and the pathologic changes caused by the tubercle bacillus. He believes these leucocytic changes are not the result of a specific reaction to the tubercle bacillus, but rather, a response to the type of pathologic tissue damage secondary to invasion by the tubercle bacillus. Thus, tubercle formation calls forth the large mononuclear leucocyte or monocyte, which in turn is a progenitor of the epithelioid cell of the tubercle. If healing takes place the lymphocyte is attracted. If, however, the monocytes are unable to prevent spread of the disease, necrosis results, and this type of tissue damage attracts the neutrophile. After caseation and necrosis occur, the neutrophile is no longer required, but if healing takes place, the monocytes and lymphocytes then invade the lesion. Medlar further emphasizes the point, that the increase in neutrophiles seen so uniformly in blood studies of individuals with active tuberculosis, is probably not a result of secondary infection, but is a re-

*Glen Lake Sanatorium, Oak Terrace, Minn., and Department of Medicine, University of Minnesota.

sponse to tissue damage, namely, necrosis and caseation which attracts the neutrophiles. This interpretation is at variance with that of most of the earlier authors, although Spooner[12] in a study of the bacteriology in tuberculous kidneys, stresses this same point. Results, as a whole similar to those reported by Medlar, have since been reported by Oatway,[13] Dunlop,[14] Morris and Tan,[15] Flinn,[16] Flinn and Flinn.[17]

The work of Sabin, Cunningham and coworkers[18 19 20] has also aroused considerable interest. Their concept deals primarily with tuberculosis as a disease of the monocyte. This cell has been described by many previous authors and various names have been applied to it. Thus, we have the endothelial leucocyte of Mallory, the transitional cell of Ehrlich and the histiocyte of Kiyono, all of which are more or less synonymous with the monocyte of Sabin. The aforementioned authors believe the supravital technique, originated by Pappenheim and refined by Sabin, leads to more accurate identification of the monocyte, and furthermore their technique allows the cell to be studied in its living state. They present evidence to show that the monocyte is derived from the reticular tissue cells, and that in tuberculosis these monocytes are rapidly changed to epithelioid cells taking part in the formation of tubercles. Further subdivision of the epithelioid cell leads to the giant cell. Their conclusions, based largely on experimental work, are that active tuberculosis causes a marked increase of the monocytes in the body tissues, and this increase is reflected in the monocytes of the blood. The degree of increase is felt to be proportional to the severity of the disease process. They also formulated a ratio between the circulating monocytes and lymphocytes. Normally this ratio, expressed as M/L, is as 1/2.97. As the number of monocytes increases at the expense of the lymphocytes, the disease is more severe and the prognosis is less favorable. As the opposite condition ensues, namely, an increase of the lymphocytes with a decrease of the monocytes, the prognosis is more favorable. This work has been confirmed experimentally by Bosworth.[21] McJunkin[22] discussed the endothelial leucocytosis produced in guinea pigs by various bacilli including the tubercle bacillus. Finner,[23] Morris and Tan, and Flinn have since published clinical studies which agree, in the main, with Sabin's work.

Technique and Results

We have attempted to evaluate the changes which occur in the leucocytic blood picture as a result of pulmonary tuberculosis. The results are based on a comparison of the admission and discharge leucocytic blood picture of 227 patients who have completed the "cure" at Glen Lake Sanatorium. These cases were all "active" on admission—that is, an x-ray lesion, symptoms and usually positive sputum were present. They remained on treatment a varying length of time, ranging from one to many years. All these patients were eventually discharged "recommended" after they fulfilled the requirements of graduated exercise up to four hours daily for a period of four months. All cases with complications, either of a tuberculous or non-tuberculous nature, were as far as possible eliminated. This was done so that the leucocytic blood picture would reflect the changes caused by pulmonary tuberculosis alone. No case with hopelessly far advanced disease was included in this series. All of the patients herein reported became well, either by bed rest treatment alone, or by means of bed rest supplemented by various types of collapse therapy.

The simplest laboratory procedures were carried out believing that if the changes in the blood picture were demonstrated to be of clinical value, the simplicity of the procedure would aid in permitting routine blood studies at regular intervals. Total white blood counts and differential counts were made—200 cells being counted in the differential. Wright's stain was used on all smears. The blood was taken during the morning, and counts made by an experienced technician.

Based on the classification outlined by the National Tuberculosis Association, 123 patients had far advanced pulmonary tuberculosis of the adult type, 82 had moderately advanced and 22 minimal tuberculosis.

The differential counts were all calculated on the basis of absolute numbers, as it was felt this was of greater importance than the differential percentages. We used Medlar's base line, namely, 5,000 as the upper limit of normal for neutrophiles, 2,000 as the lower limit for lymphocytes and 700 as the upper limit for monocytes.

Table I lists the average changes which occurred in the entire group based on extent of pulmonary disease. The total white blood count shows a definite increase on the admission counts when compared with a normal of 7,500 to 8,000. This increase is quite marked in the moderately advanced and far advanced groups, and is absent in the minimal group. On discharge we find a decrease in all groups—this decrease being most marked in the advanced cases. However, the minimal cases also show a decrease when the aver-

TABLE 1
AVERAGES OF TOTAL AND DIFFERENTIAL ABSOLUTE COUNTS IN 227 DISCHARGED PATIENTS

	No. of Cases	—Total W. B. C.— Adm.	Disch.	—Neutrophiles— Adm.	Disch.	—Lymphocytes— Adm.	Disch.	—Monocytes— Adm.	Disch.
All Cases	227	9163.22	7116.52	6194.28	4255.92	2404.06	2369.71	469.15	383.68
Far Advanced	123	9781.71	7292.07	6783.89	4398.76	2404.36	2407.23	504.17	384.76
Moderately Advanced	82	8696.95	7003.66	5753.81	4205.74	2399.38	2285.63	437.36	393.35
Minimal	22	7443.18	6555.68	4539.63	3644.01	2419.88	2473.34	393.09	341.15

TABLE 2
DISTRIBUTION OF TOTAL LEUCOCYTIC COUNTS ON 227 PATIENTS

	2,000 to 4,000	4,000 to 6,000	6,000 to 8,000	8,000 to 10,000	10,000 to 12,000	12,000 to 14,000	14,000 to 16,000	16,000 to 18,000	18,000 to 20,000
Admission	0	7	80	76	31	22	6	4	1
Discharge	1	39	133	50	3	1	0	0	0

TABLE 3
DISTRIBUTION OF TOTAL NEUTROPHILE COUNTS ON 227 PATIENTS

	1,000 to 2,000	2,000 to 4,000	4,000 to 5,000	5,000 to 6,000	6,000 to 8,000	8,000 to 10,000	10,000 to 12,000	12,000 to 14,000	14,000 to 16,000
Admission	0	24	58	47	58	29	3	6	2
Discharge	1	84	98	38	6	0	0	0	0

TABLE 4
DISTRIBUTION OF TOTAL LYMPHOCYTES ON 227 PATIENTS

	800 to 1,200	1,200 to 1,600	1,600 to 2,000	2,000 to 2,400	2,400 to 2,800	2,800 to 3,200	3,200 to 3,600	3,600 to 4,000	4,000 to 4,400	4,400 to 4,800
Admission	3	21	40	55	50	34	11	8	3	2
Discharge	2	20	40	64	47	37	12	4	1	0

TABLE 5
DISTRIBUTION OF TOTAL MONOCYTES ON 227 PATIENTS

	0 to 200	200 to 400	400 to 600	600 to 700	700 to 800	800 to 1,000	1,000 to 1,200	1,200 to 1,400	1,400 to 1,600
Admission	46	56	56	23	16	15	12	2	1
Discharge	35	93	66	21	8	3	1	0	0

age discharge count is compared with the admission count.

The neutrophiles show definite changes and are in the main responsible for the changes in the total count. It will be noted that the average total neutrophile count is higher than 5,000 in the advanced cases. In the minimal cases on the other hand, the neutrophile averages are in the normal range.

We were greatly surprised, in calculating the absolute number of lymphocytes in the various stages, to find results at variance with most of the reported literature. Only very slight variations in the lymphocyte counts were found, regardless of the stage of disease, or the degree of healing. Because this series represents a selected group, we believe confirmation of these findings necessary before any sweeping conclusions can be drawn. However, I would like to emphasize again the necessity of calculating the number of the various cells on an absolute basis rather than on a differential percentage basis. Erroneous conclusions, I believe, may be drawn from percentage calculations alone.

The large mononuclear leucocytes or monocytes are below the upper normal limit in all the averages, but show an increase in the advanced cases when compared with the minimal cases. On discharge, the monocytes in all groups were decreased when compared with the number present on admission.

Table 2 shows the distribution of the total white counts. On admission 64 of the cases had a total leucocyte count over 10,000 while on discharge only four had a total count over 10,000.

Table 3 shows the distribution of the total number of neutrophilic leucocytes, both on admission and discharge. On admission, 145 of the patients had a total neutrophile count over 5,000, while on discharge 44 had such a count. Forty of the patients had a total neutrophilic count, on admission, of over 8,000, while on discharge there was no neutrophilic counts that high.

The distribution of total lymphocytes is shown in Table 4. The counts show no definite pattern and tend to prove the point that there is no vital change in the number of lymphocytes in the discharge group as compared to the admission group.

Table 5 shows the decrease in the average number of monocytes on discharge as compared to admission. Forty-six of the patients had a total monocyte count over 700 on admission, as compared with 12 on discharge. Fifteen had a total monocyte count over 1,000 on admission, while one patient had that number on discharge. This

again demonstrates the fact that the monocytes are increased in active tuberculosis and tend to decrease as the disease is controlled.

Discussion

With the exception of the lymphocyte group, the results in the patients studied, coincide in general, with the results published by the authors previously mentioned. In active tuberculosis there is a slight to moderate leucocytosis with an absolute increase in neutrophilic leucocytes and to a lesser degree the monocytes. As the diseased process comes under control, there is a decrease in these cellular elements as well as in the total leucocyte count. The advanced groups show these changes to a greater degree than do the minimal cases. There are, however, only slight differences in reaction between the moderately advanced and far advanced groups. This is probably due to elimination in the present series of all cases with hopelessly far advanced disease.

We were somewhat surprised to note the absence of material differences in the total lymphocyte count in the advanced cases on admission as compared to the minimal cases, and also the slight variation in the number of these cells in the discharge inactive group when compared with the admission active group. It does not seem that any technical error in cell identification could account for this result, as the changes in neutrophiles, monocytes and total leucocyte counts are in accord with results published by various authors in the current literature. The total lymphocyte findings in our series is at variance with most of the reports in the literature on this subject. Workers at the Rockefeller Foundation[24 25 26 27 28 29 30] reported the results of their studies on the relation of lymphoid tissue to resistance against infection with the tubercle bacillus. They found that conditions, such as heat, splenectomy, cancer immunity and stimulating doses of x-ray, which increased the number of lymphocytes in the blood of experimental animals, also increased the resistance of the animals to tuberculosis. A decrease in the number of lymphocytes by large doses of x-ray lowered the animals' resistance. Clinical reports on this subject published by Ullom and Craig, Solis-Cohen and Strickler, Wright and King, Miller and Reed, Cummings, Webb, Gilbert and Newman,[31] Sweany,[32] Medlar and co-workers, Morris and Tan, Cunningham and Tompkins, Brock,[33] Dunlop and others are all of the general opinion that the number of lymphocytes in the peripheral circulation decreases as the severity of the tuberculous process increases, and also that the total lymphocyte count increases as healing takes place. In analyzing some of the reported figures, it was found in a few cases that only percentages of the different cells were considered which do not give as true an index of what is taking place as do the absolute numbers of each cell. Many of the authors, however, have considered the absolute number of lymphocytes as well as percentages. Their results remain at variance with ours. On the other hand, Corper and Gauss[34] were unable to confirm the work of Murphy and Ellis as it related to the increase of lymphocytes and resistance to tuberculosis caused by exposure of experimental animals to dry heat. Bender and DeWitt[35] were unable to obtain any evidence that lymphocytes maintained resistance to tuberculosis in guinea pigs which developed chronic tuberculosis. They make the interesting point that guinea pigs normally have a high percentage of lymphocytes, but have a low resistance to tuberculosis. Flinn found that the average number of lymphocytes increases slightly as the disease advances, and then decreases, at first slowly, but quite rapidly as the terminal stages of tuberculosis are reached. One possible explanation of our findings may lie in the selection of cases. All of the cases reported controlled their tuberculous lesions. Therefore, the resistance of these patients against tuberculosis must have been adequate. This could possibly explain the fairly high values obtained on the admission counts, but does not explain the absence of any increase during or after healing occurred.

We were unable to confirm Medlar's finding of a secondary rise in the number of monocytes when healing occurs.

The number of eosinophiles or basophiles was not included in this study as no relationship to the tuberculous process could be demonstrated.

The blood changes in tuberculosis are of definite value when accurately studied and carefully interpreted. Counts taken at regular intervals, as advocated by Medlar and other workers, should be done if the maximum information from this method of examination is desired. Medlar's interpretation of the entire leucocytic blood picture is being followed, and his description of the various changes and their relation to the pathogenesis of tuberculosis has the best application to clinical work.

Summary

(1) The material for this study was obtained by comparing the admission and discharge leucocytic blood picture of 227 patients who were able to control their pulmonary tuberculous lesions.

(2) In active pulmonary tuberculosis there is

a slight to moderate leucocytosis which is most marked in the advanced cases. When the same cases are studied after the tuberculosis has become inactive, this leucocytosis is absent.

(3) The absolute number of the neutrophiles and monocytes are increased in active pulmonary tuberculosis and return to normal, with very occasional exceptions, when the tuberculous lesion is under control.

(4) The total number of lymphocytes show very little change regardless of the stage or activity of the disease.

(NOTE: I would like to express my appreciation to Miss Frances Nemec, of our Statistical Department, for her computations.)

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ENFORCING THE MEDICAL PRACTICE ACT

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MEDICINE is generally a matter of statutory definition in the various states. For some who practice the art, licenses are required.

Thus, regular physicians and surgeons, osteopaths and chiropractors, must be licensed to practice medicine.

But, otherwise, there are unlicensed persons who treat human ailments professionally for a fee, such as naturopaths, physio-therapists, electro-therapists, hydro-therapists, magnetic healers, faith healers, operators of health systems, and others.

For instance, there are Christian Scientists, midwives, bone setters and such who practice in a limited way to alleviate human ailments.

All of these, in a greater or lesser degree, in one form or the other, practice medicine, because medicine, as a science or as an art, concerns human ailments and a healthy human body. Practically all of the states require those who must be licensed to have some degree of preliminary education, and some degree of medical education and training.

For those not required to be licensed, no preliminary training and no particular medical education or training is generally required.

When we turn to other fields of human endeavor outside of the treatment of the human body and its ills, whether it be in the animal kingdom, insect life, plant or other inanimate life, or whether it be in the fields of general science, the

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industries or in commerce, for all, high educational training and expert knowledge is a prime requisite.

If the ravages of disease are threatening in the animal kingdom, if destructive organisms are attacking our plants or crops, we require those who practice the art of remedying the disease or eradicating the destructive organisms, to have expert knowledge and training.

When the human body and its ailments become concerned, being the most delicate and intricate of machines, long training, intense study and expert knowledge is necessary to understand its ailments and its functioning processes.

However, strange to say, we observe that the law, in so many instances, permits those to treat this human machine for its ailments and for the maintenance of its health, who are without education and in some cases without any medical training or expert knowledge whatsoever.

The Medical Practice Acts in the various states are enacted under a police power to conserve the public welfare. They are so enacted to regulate the practice of medicine and to protect the public health.

A decision of the Supreme Court of Minnesota has stated that these statutes are not enacted for the benefit of any profession or of any school or any theory of medicine, but that they are designed to secure the public against the mistreatment of human ailments by unqualified persons. See State vs. Board of Examiners (Minn.), 250 N. W. 358.

A North Dakota Supreme Court has held that the Medical Practice Act is for the protection of the public health against the ignorant, the charlatan and the imposter, and is aimed at those who profess to be what they are not.

This same Court holds that the practicing of medicine occurs when one diagnoses a disease and prescribes and applies any therapeutic agent as a remedy; also, that it is immaterial whether the remedy prescribed is harmless because it is sufficient if it be prescribed as a medicine; because medicine indicates an art of healing. See State vs. Miller, 229 N. W. 572.

An Iowa Supreme Court has held that the Medical Practice Acts are enacted for the protection of the public against the unskilled treatment of the sick or diseased by persons having neither the preparation or skill to diagnose diseases or to administer powerful and poisonous drugs. Also, that the welfare of the public is of the utmost concern in the enforcement of laws designed to guard and protect the public health. See State vs. Baker, 235 N. W. 313.

The Medical Practice Act of Minnesota, North and South Dakota and Montana generally provides that those who seek to use the titles of doctor or physician and surgeon, and who seek to diagnose, prescribe or administer drugs, or medicine for the treatment of human diseases or human ailments, must be licensed so to do. Otherwise, the statutes generally in these states provide for the licensing of osteopaths to practice medicine as osteopaths; and, likewise, for the licensing of chiropractors, to practice as chiropractors.

These statutes generally prohibit the practice of medicine by the unlicensed with particular exceptions made for Christian Scientists, and to some extent midwives practicing obstetrics and to a limited extent for those simply using domestic remedies.

So under such statutes it happened, in Minnesota, that a naturopath who used natural remedies, such as herbs for the treatment of disease, and who was unlicensed, was held to be practicing medicine in violation of the statute. See State vs. Board of Examiners, 250 N. W. 358.

Likewise, in North Dakota another naturopath claiming to be such, and claiming to operate as a minister under the tenets of the Seventh Day Adventist Church, although not licensed to practice medicine, carried on a business of prescribing and administering herbs and some patent medicines to his patients for which he charged a fee. The Court held that he was practicing medicine in violation of the statutes and further that religious tenets could not be used as a shield to cover a business undertaking. See State vs. Miller, 229 N. W. 569.

So in another Minnesota case, a layman who furnished tests, such as blood tests, urinalyses and blood pressure tests and gave advice with respect thereto was held to be practicing medicine in violation of the statute. The Court said that the science of diagnosing human ailments had become a distinct branch and department of the medical profession. See Granger vs. Adson et al, 250 N. W. 722.

In the Iowa case above mentioned, one Baker operated an institute for the purpose of treating certain diseases such as cancer, goiter, gall-stones and diabetes. He was not licensed to practice medicine. This institute had a secret formula, liquid in form, which was administered to patients hypodermically. The Court held that the institute could not be licensed to practice medicine; that this right to practice was personal and that the acts were a violation of the Medical Practice Act.

In a Wisconsin case, defendant operated an

"American Society for the Conservation of Vision, Inc." He conducted a business of examining and treating the eyes of his patients. He was not licensed to practice medicine. He was held guilty of violating the Medical Practice Act.

Generally speaking, the enforcement of the Medical Practice Act becomes involved when those who are licensed to practice step outside of the fields of their profession or beyond their rights of practice; or, in cases where the unlicensed seek for a fee to remedy human ailments by the use of drugs, medicines or appliances or manipulations considered by them in any event harmless and not detrimental to the public health.

The violation of the Medical Practice Act is not so much to be found with respect to diseases for which the science of medicine and the practice of its art by the licensed physician and surgeon affords adequate remedial treatment. The same may be said so far as the application of the quarantine laws are concerned.

Likewise when an arm or leg is broken, when amputation is required, when major operative treatment becomes a necessity to save life, the people generally are sufficiently advised and informed as to the remedial efficiency of the licensed physician and surgeon so as to pay little heed to the appeals of the irregular or the unlicensed in such cases.

But when people become afflicted with chronic diseases such as cancer, malignant tumors and such like, for which medical science has not yet discovered sufficiently efficient remedial treatment, or when persons become afflicted with those diseases which require major surgical treatment for their eradication, a fertile field is opened for the unlicensed to impose his treatments or his mechanics upon such suffering people so afflicted.

In such situations the difficulties encountered in compelling obedience to the law is the securing of an alert and sympathetic public attention which frowns upon law evasion together with an interested co-operation by the law enforcing officials and those lawfully licensed and lawfully practicing medicine.

When a regular licensed physician or surgeon engages in the doing of things in violation of the Medical Practice Act or other criminal laws, little difficulty is experienced, when the facts become publicly known, to prosecute the individual and to remove him from the profession. If such regular licensed physician or surgeon becomes a peddler of narcotics and engages in practices of abortion, enforcing the law is easy when facts become known.

But when the unlicensed open their shops and solicit the treatment of patients afflicted with chronic diseases by means, methods, medicines or appliances, which they assert to be curative or at least harmless in their use, or when those who are licensed to practice in a limited way in their own fields, such as osteopathy or chiropractic, start engagements in larger fields with methods, drugs or appliances beyond osteopathy or beyond chiropractic, the enforcement of the Medical Practice Act becomes more difficult and more involved.

For instance, an unlicensed person comes from abroad. He selects a location and opens an office, or perhaps a hospital. He calls himself a healer, perhaps a naturopath, perhaps a therapist of some kind. He has a remedy for cancer and other incurable diseases, and he advertises his treatments. Thus, suffering people afflicted with chronic diseases are induced to experiment with his treatment. If some temporary relief is given, a sort of public sympathy is created which frowns upon prosecution for violation of the Medical Practice Act. In such cases the unlicensed rides along in his practice until trouble occurs by deaths among the patients or the development of their ailments in a more serious way. In such cases the prompt enforcement of the Medical Practice Act requires an interested co-operation by those who are licensed to practice and the prosecuting officials, concerned for the obedience of law and the protection of the public health.

Again, the interpretation and the enforcement of the Medical Practice Act becomes somewhat involved and more difficult when those specially licensed to practice step into fields of practice thought to be beyond their right to practice. For instance, a chiropractor, having the right to practice, in accordance with the tenets of chiropractic, turns to the radio and broadcasts his ability to remove tonsils efficiently and without pain. Patients attracted by the advertising are treated by an electro-coagulation process with the use of an electric needle and hypodermic for a local anesthetic. These treatments are ordinarily considered surgical and are accompanied with the internal uses of appliances and drugs. They seem to involve knowledge, training and experience beyond ordinary chiropractic. The Medical Practice Act immediately becomes involved. The public for its own protection is entitled to know whether the chiropractor is authorized so to practice.

Then again, an osteopath comes into the state and opens an office. He advertises himself as if a regular physician and treats patients with the use of drugs. He prescribes and administers

medicines the same as any regular licensed physician may do. He claims the right to use the title of doctor without qualification. He asserts the right to practice generally the art of medicine. Licensed as an osteopath, the question becomes pertinent whether he can practice the same as if he were licensed as a licensed physician. The North Dakota law describes osteopathy as the art and the science of applied therapy, as hertofore or hereafter taught by the recognized colleges of osteopathy, except major surgery.

The law further gives licensed osteopaths the right to prescribe and use such medicinal agents as shall be necessary in connection with the practice of obstetrics, and grants to the osteopaths the right to use the title "D. O." or Doctor of Osteopathy.

In the last illustration cited, this osteopath was removed from the general practice of medicine by an alert public official with the co-operation of the public and those licensed to practice medicine.

All of the above serves to show that the protection of the public health and the protection of the public in the treatment of human ailments is very much involved in the enforcement of the Medical Practice Act. Otherwise, the practice of medicine is bound to flow in greater degree into the hands of those who are unlicensed or into the hands of those who want to practice beyond their license. This necessarily would mean less educational training, less medical training and less medical experience required in the practice of medicine.

So it is that the enforcement of the Medical Practice Act and the ultimate purposes of the laws to conserve and protect the public health and to remedy human ailments can be expected in accomplishment only by the active co-operation, interest and enthusiasm of those who are directly concerned and licensed to protect the public health and the public itself.

THE MANAGEMENT OF COLDS*

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IT IS with an apology that I broach this subject of such an ordinary status—a subject that by its prevelance had become tolerated to a point of acceptance and is allowed to ply an almost unrestricted course in our midst. It is peculiar that a disease so common should receive so little attention yet colds go their course little affected by our management and little investigated.

The term common ordinary cold is very apt, for no other condition causes so much debility and impairment in function in such a large group of people. The individual who escapes this infection is rare and he who plays host to it is certainly reduced in efficiency even though he be doing nothing. Reliable statistics show that 90 million work days per year lost at a cost of 450,000,000 dollars on account of colds alone. Studies in a large group showed that out of 94,800 cases of sickness 26,800 were respiratory infection. Again it was shown that acute respiratory infection caused 36.4 per cent of the loss of time in an industrial group and 50.7 per cent in a school group. In truth, then, we have a large problem presenting itself for most of the year and this is especially so in the case of those dealing with the health of large groups of people as is well exemplified in a Student Health Service. This problem is concerned not only with the pathology involved in colds but broadens out into the economic field as respects loss of time and reduced efficiency and leads on into the more serious phase of complications which so frequently follow.

So it is with an apology in one hand and a challenge in the other that this subject is presented to you.

In this discussion, the term colds is used in the broader sense to include all infections of the mucous membrane of the upper respiratory tract. For in the strictest sense there is little difference between a rhinitis and a pharyngitis except in location and a sinus infection is an extension involving similar tissue in a similar manner as does a rhinitis. It is more acceptable to me to think of rhinitis, pharyngitis, laryngitis, bronchitis and influenza as a group bound together by common ties and different only in location except in the case of influenza possibly the organism. The term acute upper respiratory infection covers this group and carries the idea that they represent a unit of disease all closely allied and interrelated.

The response of tissue to an irritant is basically the same whether the irritant be chemical, thermal, bacterial or allergic but here we will consider only the inflammations due to supposed bacterial action.

The exact cause of colds has not been determined. The commonly accepted idea that the bacteria known to be constantly present in the nose, throat and mouth soon after birth are

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responsible for the production of colds is now generally discarded due to the investigations during the past five years. The work of Dochez, Shibley and Mills, of Long and Doull and others have given the same results. These experiments were done by inoculating healthy apes and human volunteers with the washings from the nose-pharynx of individuals having an acute rhinitis, which washings had been passed through the finest filters. Within 24 hours the characteristic symptoms of the acute disease have consistently appeared. Washings from healthy individuals treated in the same way have produced no symptoms. Dochez has carried this further and by successive inoculations of human volunteers passed the same infection through quite a number of subjects. In this experiment the filtrate was grown on a suitable media and it was found that the virus kept under varying conditions was active for a period of 17 days or more. These observations indicate that colds are infectious and directly transmitted from one person to another, that the infecting agent is a filterable virus, that this virus can survive under varying conditions for a period of two weeks or more and that it will reproduce itself in vitro in suitable media.

If these observations represent the true state, then the widespread epidemics of colds are not mysterious. It seems to me that a direct contact may not be essential for transmission but that a local atmosphere may be so permeated with the agent that all individuals in that area are automatically exposed. Why then do not all individuals have the disease? The answer must lie in the possibility that the infecting agent is only one of the factors involved in the production of colds and that other conditions must be present before symptoms may arise. All of us have observed individuals survive serious conditions, have watched tissue fight an invading agent and win, and have seen healing take place in spite of great odds and have felt that there is an almost unlimited ability of living tissue to throw off, combat and expel most invasions. The survival of tissue lies in this field. Granting then that tissue resistance is a factor we still see many other variable conditions which seem paradoxical. The men on Byrd's Expedition have no colds; the inhabitants of the Arctic know no colds until an infected individual comes in, the prevalence of colds is about the same over widely distributed areas. Persons living in overheated houses are easier victims of colds than those working in the exposed conditions. Drafts, cold feet, getting wet and a thousand other conditions are blamed but surely they are incidental. Could it not be that the chemistry of our blood and tissue fluids expose us to or protect us from colds and that the physiological phases of the body have a bearing on this problem. It has been found that adrenalectomized rats have a poorer adaptability to cold than normal ones and it is well known that thyroid and ovarian dysfunction alters the thermal control of the body.

If the cause of colds is a virus then what part do the pathogenic bacteria of the nose and mouth play in the picture? Some think that the filterable virus may represent one phase in bacterial mutation being then the bacteria in disguise. Others consider the streptococcus, staphylococcus, pneumococcus and others to be secondary invaders awaiting the chance for activity—for the balance between resistance and invaders to be disturbed. Here is where the seriousness of colds begins. These pathogenic bacteria are capable of serious results. It may be that the virus itself is of little danger but when aided by these others damage is done. A practical application of this is that the best treatment of sinusitis, otitis, media, bronchitis, etc., is the prevention of colds. There are two interesting clinical features to acute upper respiratory infections. One is that these conditions seem to predispose an individual to future attacks which is quite contrary to the usual idea of immunity production. The other is that these infections come in cycles. In influenza it is about every 33 months with a severe epidemic about every 13 years. In colds the cycles or waves change within the same year. For instance, in this past school year, in my experience, there were five distinct waves of upper respiratory infections each different from the other. The first began in September and was characterized by pure rhinitis symptoms; this was followed by a type beginning in the throat and extending into the naso-pharynx and nose; following this a type definitely localized in the larynx and upper bronchi. The fourth wave came as a rhinitis, spread into the pharynx and ended as a bronchitis, and, finally, a peculiar type which caused an intense watery discharge with profuse lacrimation and in some cases redness of the conjunctiva with photophobia—simulating the allergic type. No cases were diagnosed as influenza and sinus infections were fewer than usual. It is interesting to consider the possible relationships between the widespread measles epidemic of the past year, the absence of influenza and the number and variety of colds.

The cure of a cold, I believe, is from within—the result of chemical adjustments. This condition

vies with rheumatism and indigestion for first place in the number of remedies used which is definite evidence none are outstanding.

It is essential in the management of upper respiratory conditions first to determine the true basis of each case. Early pulmonary tuberculosis may appear as an acute upper respiratory infection; a chronic sinusitis, infected tonsils or nasal abnormalities may be the basis for recurrent colds. Allergy and occupational factors may play a part. Colds which are so quickly dismissed as treated really deserve more careful attention than is usually given them. It would be helpful if each doctor would become a fanatic on this subject. If the resolution of a cold results from a general adjustment of the body then the foundation of treatment must be the application of the so-called "rules of good health." Rest and fluids are the first stones to be laid followed by proper foods and elimination without purgation. A simple cold, however, is not considered important over and against the economic and social demands so this first step is neglected. I believe our experience at Vanderbilt has been happy because this rule was emphasized. Students were quickly withdrawn from exercise and if need be from classes to fulfill this principle.

The medical treatment of colds has been extensive both as to types of medicine and number of patients. If any specific medicine has a definite absolute value in cure of colds it is yet to be proved. The time-honored remedies are many. A case in point which represents well the misguided treatment of colds was that of a man suffering from an acute rhinitis. His friends supplied him well with different forms of alcoholic remedies and when seen he had treated himself so thoroughly that the original conditions had given way to delirium tremens. The cold was merely put into the background and I wonder now if that is not the condition when opium derivatives are used. The work of Diehl as reported in 1933 gives a definite value to certain of the opium group. They report 70 to 80 per cent definite improvement from the use of codein and papaverine. Whether this improvement is due to specific action on the actual cold process or to the sedative effect it would be difficult to prove. It is true, however, that codein in and of itself would naturally make a patient feel better and so think himself better. In spite of these doubts we have adopted the use of the copavin capsules as the medical part of our routine treatment of colds. We have had good as well as indifferent reports on the effects of this capsule. I believe that in influenza the combination of codein and pyramidon is almost specific. It decreases the symptoms, thereby increasing the amount of rest which is perhaps 90 per cent of the treatment of influenza. The so-called APC tablets are used by many and I believe are of some value. These tablets contain aspirin, phenacetin and caffein citrate. The long list of other medicines for the management of colds, I believe, can be dismissed.

The fad of light therapy presents itself in this field. Much has been claimed for it in combating respiratory infections and perhaps more against it. From my experience I firmly believe that both the ultra violet and infra red are valuable adjuncts in cold management. It is claimed that there is a direct ratio between the amount and efficiency of sunlight and the number of respiratory infections—the more sunlight the less respiratory infections. This may be the rational of ultra violet treatment. There has been a decided improvement in our series of respiratory patients when the ultra violet was used. This is applicable to the acute as well as the chronic and I firmly believe is one of the best measures for cold prevention. The infra red is useful especially in acute sinusitis where if used sufficiently is acceptable to the patient and shortens and course of the attack.

It has been the rule that little has been available in the treatment of the chronic respiratory infections. There is one measure, however, I feel is especially significant in this field despite the ridicule that has been thrown at it—that is the catarrhal vaccine. Vaccine therapy has a poor footing, accepted in some ways and rejected in others. Typhoid vaccine holds the respect of the world while acne vaccine has few friends. The recent use of Crow's vaccine in rheumatic conditions is very beneficial and although it contradicts the old idea of big doses it adds new usefulness to the idea of vaccines. In colds the benefit of catarrhal vaccine probably lies in the field of desensitization. It is true that the type most benefited by this treatment is that simulating the allergic condition of the nose. I feel that during the past eight years by the free use of catarrhal vaccine the incidence of colds in the group given has been materially decreased and that benefit is derived by 70 to 80 per cent of the individuals using it. I feel that any person having recurrent colds, chronic sinusitis, or chronic bronchitis and those under treatment for hay fever should have catarrhal vaccine. This form of treatment is less effective in the chronic states and is, it seems, without effect in pharyngitis and laryngitis. We have found that six doses injected at intervals of

four to five days in increasing amounts and followed by monthly injections of the maximum dose during the winter months gives most satisfaction.

An outline then of a treatment for the control of certain of the respiratory infections is:

1. Strict observance of the rules of good health.
2. Use of copavin.
3. Use of ultra violet and infra red lights.
4. In chronic cases and as a preventative measure the use of catarrhal vaccine.

In closing, I feel that any discussion on this subject is of necessity confusing for the different interpretation of terms and ideas, the different clinical experiences and the different attitudes with respect to its importance give a heterogenous picture. In any event there is always the truth to be discovered and to that end I believe more effort should be directed in this important and poorly understood field. Would it not be practical and highly beneficial for the various student health services to take this problem on their own shoulders and so organize and systematize the diagnosis, treatment and reports so that new facts could be unearthed and some general advance made to reduce the magnitude of the management of colds.

FRACTURES ABOUT THE SHOULDER AND HIP*

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FRACTURES of the humerus about the shoulder may be of several types, ranging from fractures separating the tuberosities to complete fractures of the neck, with or without dislocation of the head. The diagnosis of a fracture is based on a suggestive history and the clinical findings of pain, deformity and crepitus, but a final analysis of details rests on x-ray study of the shoulder. This should be made in two planes or in stereoscopic view, since one view often gives a false impression of the deformity present. It is frequently seen that the antero-posterior view shows a fracture of the humeral neck in seemingly good position, or apparently impacted, while a view taken through the armpit with the arm at right angles to the shoulder shows the fragments separated and over-riding. Stereoscopic views will show this as well, but view-boxes permitting their use may not be available. Therefore, in routine office work, the two-plane exposure will often be found more convenient. After giving the patient a sedative it is not difficult to raise the arm to a right angle in order that the lateral view of the shoulder can be taken.

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Fractures of the Greater Tuberosity

These fractures are usually easy to reduce, but the end results are often poor. This is due to the trauma to the sub-deltoid structures resulting in adhesions, which lead to residual stiffness and pain. External rotation and abduction are the motions most commonly lost. Therefore, one should always place these fractures in the position of 90 degrees of abduction and complete external rotation, so that the elbow is away from the body and the hand and forearm are vertical. This may be done by means of a cast or by bed rest and traction. If a cast is used, the superior portion covering the arm should be removed in two weeks and active and passive abduction movements of the arm begun. Heat and light massage to the fracture site will be of benefit. By the end of a month the patient should be able readily to abduct the arm away from the cast. The cast can be removed at this time and the arm brought to the side. The patient must then faithfully go through exercises daily, obtaing all of the normal motions of the shoulder with particular emphasis on abduction and external rotation.

Open reduction of the fracture is occasionally necessary to replace a fragment which remains separated. The fragment is fastened in place with rustless wire or heavy suture. The post-operative regime should be carried out in the manner as outlined above.

Fractures of the tuberosities are occasionally associated with dislocation of the shoulder. In these cases, the dislocation must be reduced as though there were no fracture present and maintained with the arm in the usual abducted position for ten days, after which the treatment should be directed toward the fracture, abducting the arm to a right angle and rotating externally. Motion and physiotherapy are carried out as previously described.

Fractures of the Neck of the Humerus

These fractures are not infrequently impacted in good position. These impacted fractures need no reduction if the position, as shown by x-ray in two planes, is satisfactory. The arm is placed on an aeroplane splint without traction and motion is begun in two weeks. The arm may be allowed to drop to the side in three weeks and

exercises carried out daily, obtaining complete abduction and rotation. Motion obtained by active exercise is more beneficial than that obtained passively. However, it is usually necessary to assist the patient in moving the arm at first. Therefore, all exercises should at first be carried out under the physician's supervision. Those fractures which are not impacted tend to show a fairly typical displacement. The distal fragment is most generally anterior to and below the proximal fragment. Such fractures must be reduced, and the most satisfactory results will be obtained if the reduction is done with the arm in abduction. Before reducing the fracture, the splint must be made ready. An aeroplane splint can easily be made by any mechanic by welding light iron or steel rods to form a frame which will fit alongside the body and under the arm and forearm in the form of a platform. The portion of the splint extending directly laterally to the bent elbow should extend beyond the forearm portion for a distance of six inches and to this portion a pulley is attached. The splint is padded heavily with felt, sheet wadding and bandage so that the superior surface and axillary surface is convex. It is important that the part of the splint which will lie directly under the fracture is built up to overcome the tendency for the distal fragment to slip downward after reduction.

The reduction is most conveniently done with local anesthesia, injecting 30 cc. of 1 or 2 per cent novocain solution into the fracture hematoma, after carefully preparing the skin with merthiolate or other good antiseptic. The use of local anesthesia allows for far easier handling of the patient and of the arm. Occasionally it is necessary to use a general anesthesia, and when this is done, ether would be preferred to gas, since it is essential that complete relaxation of the muscles is obtained.

After the local anesthetic is given, the patient is seated upon a stool, the arm is raised to 90 degrees abduction and the splint is fitted against the body and under the arm. The body portion of the splint, which is padded with felt on its inner side, is bound tightly to the patient's body. Felt pads are placed along the opposite body and pelvis and wide muslin bandage is used to hold the splint in place. It is necessary to tie muslin bandage to the pelvic portion of the splint and to pass these bandages over a felt pad placed across the opposite shoulder in order to prevent the splint from slipping down. The splint should be placed so that the upper arm will point 30 degrees anteriorly and in 90 degrees abduction. This anterior position relaxes the pectoral muscles and prevents the distal fragment from being pulled anteriorly. Buck's extension is then applied to the upper arm over the bent elbow, the wooden spreader coming very close to the elbow. The upper arm is then grasped and strong traction is made upon it by an assistant, while the fracture is manipulated between the fingers until reduction is accomplished. The traction rope is then passed over the pulley end of the splint and attached to the hook of a spring scale, the other end of which is tied to the pelvic band of the splint. Traction is set at ten pounds. X-rays are then taken to check the position of the fragments. Another manipulation may be done if the fracture is incomplete, since the duration of the anesthesia is for an hour or more. It is necessary that the patient be seen daily, and the traction kept at proper tension and the necessary adjustments of the splint made. Traction is discontinued in 25 days, and active abduction and external rotation of the arm begun. The splint can be removed in five weeks and daily exercises instituted as in fractures previously described.

These same principles of treatment can be carried out in bed if this is deemed necessary, using either the abduction splint or traction over the pulleys of a fracture bed.

Fracture Dislocations of the Shoulder

These fractures are severe types of injuries, with tearing of the joint capsular structures and the surrounding muscles. There is much hemorrhage into the surrounding tissues. Fibrosis of the periarticular structures results, often leading to permanent disability of a high degree. Occasionally they may be reduced by closed manipulative methods, but the majority will require an open reduction. Dislocation of the head in a fracture of the shoulder must always be kept in mind and looked for. This is not always easily seen unless stereoscopic or two-plane x-ray studies are made. The consequence of leaving a dislocated head unreduced is a stiff and practically useless shoulder. It is essential that the dislocation be reduced immediately if a good functional result is to be obtained.

In attempting closed reduction it is best to give a general anesthetic. Traction is made with the arm in abduction, attempting to clear the glenoid fossa of bone fragments. An attempt is then made to force the head into the glenoid fossa in the axilla. If this is successful, the arm is incorporated in a plaster spica cast in the position of mid-abduction or in the Velpeau position over a large axillary pad. This position is maintained

for two weeks, after which the arm is brought into 90 degrees abduction with moderate external rotation. This is most easily done gradually, by putting the patient to bed and applying a few pounds traction to the arm, raising the arm slightly day by day.

The open operation should not be done until after a lapse of five to seven days from the time of the accident in order to allow for partial absorption of the hematoma, thereby lessening the chance of infection. The skin is prepared carefully, using extra precautions, and the fracture site is exposed by an anterior incision five inches long, centering over the fracture. Dissection is made in the muscle plane between the pectoralis major and the deltoid and is carried down to the fracture. Traction is then made upon the arm, and the head can usually be felt or seen in the depths of the wound. It is grasped with cervix tenaculum forceps, avoiding damage to the articular surface. The head is carefully wrapped in a warm saline pack while all bony fragments are cleared from the glenoid fossa. The head is then replaced and the fractured ends placed in anatomical apposition. It is best to unite the fragments and the shaft by passing heavy double chromic suture or stainless steel wire through drill holes. The capsule is then sutured, if possible, and the wound closed in layers. The arm is placed in a spica cast in abduction of 90 degrees and moderate external rotation. The upper half of the cast is removed in three weeks and active abduction and external rotation movements are begun. The cast should be removed in five weeks. Heat, massage and daily exercises are essential to obtain a good result.

Non-union in fractures about the upper end of the humerus are practically unknown. With treatment carried out properly and good reduction obtained, permanent disability is usually negligible, except in the case of fracture dislocations of the shoulder where 25 per cent of permanent partial disability is the rule and 50 per cent or more not unusual.

Fractures of the Hip

These fractures are best grouped as fractures of the femoral neck and fractures through the trochanteric region. Results of treatment in fractures of the neck are decidedly unsatisfactory, while in those through the trochanteric region, complete function and recovery is the rule.

Fractures of the Neck of the Femur

The high percentage of non-union in fractures of the neck of the femur remains, for the most part, unexplained. Certain factors are known to play a part, chief among which are: incomplete reduction, inadequate immobilization and immobilization for an insufficient length of time. Statistical studies of end results, up until recently, have placed the percentage of non-union between 40 to 50. A few more recent studies show bony union in 80 to 85 per cent. This is the group in which special precaution has been taken to assure complete reduction.

During the past three or four years more active interest has been shown in checking completeness of the reduction by means of x-ray views taken from the lateral aspect. By using a curved cassette placed against the groin and perineum, very satisfactory lateral views may be taken with a portable or other x-ray unit. This view shows incomplete reduction in a remarkably high percentage of cases where the anteroposterior or even the stereoscopic view shows an apparently good reduction. It is of interest to note that where the reduction is shown to be complete by anteroposterior and lateral views, the percentage of bony union is very much higher.

For the average doctor, reduction by the Whitman and Ledbetter maneuver with the application of a spica cast in abduction and internal rotation is, without question, the best procedure. Operative methods should be used only by those familiar with hip surgery, and treatment by "sandbag immobilization" or continuous traction in bed, is decidedly the poorest. The Roger Anderson "Well Leg Traction Splint" is useful in the occasional patient where a cast cannot for any reason be applied.

Success in the Whitman treatment for hip fracture is dependent on exact or nearly exact reduction and the application of an efficient cast. Those proficient in the use of plaster apply the single hip spica and obtain the necessary immobilization, but those who use plaster infrequently will obtain better results by applying a double hip spica extending to the knee on the well side and to the toes on the injured side. Such a cast need not extend higher than the lower costal border. In applying the single hip spica the cast must extend almost to the arm-pits and must be tightly fitted and well moulded to the bony prominences.

There are several points of some importance in the application of plaster to the body and hip. The tendency to over-padding is almost universal. The use of sheet wadding can well be largely abolished, provided that the bony prominences and points of pressure are covered with felt. It is imperative that the spine and sacrum are well

covered. Such a cast fits well and is immeasurably cooler and more comfortable. The plaster must, of course, be applied smoothly and without folds or wrinkles. Reinforcement about the hip is best done by using plaster bandage several layers thick rather than any foreign substance, such as metal or wood. A slow setting plaster should be used in order to allow ample time for rubbing the layers together as they are applied, and to mould the plaster about the bony prominences. It is best to apply the plaster in sections, beginning about the body and extending to the knee, and when this has hardened, to extend the cast to the toes. Lastly, one must work hard in applying a large plaster. The strength, appearance and fit of the finished job is in direct proportion to the time spent in rubbing the layers together, and in moulding the plaster so that the bony points are well brought out.

Actual reduction is done on a fracture table under general or spinal anesthesia. I have not had particularly good luck in obtaining local anesthesia in these fractures. In reducing, one applies traction with the leg straight or preferably with the hip flexed at right angles, then rotates internally to the limit, and abducts rather widely. The reduced hip will remain internally rotated without effort. This is Ledbetter's test and is a good index of reduction. Internal rotation should be carried to a point where the anteroposterior x-rays shows very little, if any, of the lesser trochanter. After reduction is checked by x-ray in two views, one then impacts the fragments by striking the greater trochanter with a heavy wood mallet, protecting the tissues with heavy felt. A cast is then applied. If a single spica is used, most patients can be made to stand within a few days, and to walk, using crutches or a "walker." Pulmonary atelectasis, the so-called "hypo-static pneumonia," can be prevented by insisting that the patient is turned frequently and is given deep breathing exercises. The inhalation of carbon-dioxide is not a good substitute for active deep breathing, since statistics show that it plays very little part in the prevention of pulmonary collapse. The majority of patients with hip fractures are past the age of 50 or 60. These fractures carry a fairly high mortality, and the mortality is largely due to pulmonary collapse with secondary pneumonia. Activity in any form and particularly activity in the erect position, definitely does prevent pulmonary complications. Those patients who for any reason cannot be gotten up and out of bed immediately, must be made to breathe deeply, and these breathing exercises must be done every hour or two throughout the day. Patients must be turned every two or three hours. Turning the patient also will largely prevent the formation of bed sores and pressure areas over the sacrum. One is, to a large extent, dependent on nursing care in the prevention of these complications.

Not infrequently one meets with a fracture which is impacted in good position at the time of the accident. These patients are often able to walk after the accident. Such a fracture should not be disimpacted but should have a cast applied immediately. It is usually not necessary to extend the cast beyond the mid-leg. Immobilization must be carried out until x-ray shows a bony union which is often a matter of from three to six months.

In any fracture of the neck of the femur the cast must never be removed until there is union or until non-union is definitely demonstrated. Five to six months in plaster is a long time, but if the cast is removed before this time non-union will be of frequent occurrence. Stiffness of the knee is a distressing complication, but can be largely avoided if a window is cut out over the patella and the patella is moved actively and passively daily. The patient must be taught how to tense the quadriceps and actively draw up the patella, and this exercise should be done several hundred times every day. In addition to this the nurse or attendant should massage the patellar region, and move the patella passively each day.

Treatment of non-union of fractures of the femoral neck is a subject in itself and cannot be covered in this discussion. Two general statements can be made. It is of no use to continue immobilization after several months where the x-ray shows increasing absorption of the neck at the fracture line and increasing density of the head. In such cases, the head is necrotic and will not unite in any event—the Whitman reconstruction operation offers the best hope of a good result. With a living head and evidence of absorption of the neck after six months, nailing and impaction with the Smith-Peterson type of nail will often result in union. Non-union does not, however, necessarily mean complete disability; as many patients have good function even though there is no bony union. Such patients often need no further treatment.

Disability following fractures of the neck of the femur is usually in direct proportion to the bony union obtained. Return of function cannot usually be expected in less than nine months to a year even though there is bony union in good

position. Occasionally there will be mal-union with the neck in the position of coxa vara, that is approaching a right angle, with a resultant shortening, stiffness and pain to a variable degree. Arthritis is also occasionally seen coming on one or more years after hip fracture. The mortality of these fractures is from 10 to 15 per cent and is, in most cases, due either to pneumonia secondary to pulmonary atelectasis or, in some cases, is due to fat embolism.

Fractures of the Trochanteric Region

These fractures often show evidence of comminution and, therefore, appear difficult to reduce, but their reduction is usually surprisingly easy and non-union is practically unknown. One should aim in correcting shortening and external rotation. If this is done any form of immobilization will give good results. The correction of the deformity can be done either gradually by adhesive or skeletal traction in a Thomas splint or the patient can be anesthetized, the fracture reduced by traction, slight internal rotation and moderate abduction and the position held by spica cast. I believe that in the average case the best treatment is immediate reduction and the application of the cast. Extremely obese patients or patients in whom an anesthetic is contra-indicated, may be treated by traction in bed. As in all hip fractures requiring immobilization of the knee, one must keep the patella free and active. Union is generally solid enough to allow motion and exercising without weight bearing in eight to ten weeks. Weight bearing may be started in twelve weeks if the x-ray shows sufficient callus.

POLIOMYELITIS

Methods of Treatment and some successful Operations*

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THE disease, Anterior Poliomyelitis, divides itself into various stages and certain types of treatment are in vogue in each stage. Except in times of epidemic it is rare indeed that the Orthopedist sees the case until after the diagnosis has been made and definite paralysis or weakness established. Usually the individual has received the vaccine, serum or convalescent blood under the competent hands of those familiar with acute disease and infection. The Orthopedic Surgeon is primarily a reconstruction surgeon and has the chance in the acute stage to advise and apply such treatment that will prevent deformity and aid in the recovery of the paralysis of muscles affected. We believe the acute stage of Poliomyelitis as far as treatment is concerned starts with the time of diagnosis or onset and continues until marked tenderness over the nerve trunks has disappeared. In this stage rest and quiet in bed are paramount. Apparatus or supports of various types with feet at right angles, knees slightly flexed and back straight are essential. Heat, external, and extra warm clothing to parts affected because of lower temperature of parts affected due to trophic change is necessary. Tonics, food and expectant treatment deserve note in this stage. But under no consideration should any massage, manipulation or electricity be given until the neuritis has disappeared. Slight and careful motion of the joints of the parts affected up to the point of pain is not harmful and is to be advised because it is not infrequent that the acute stage may last months.

When the neuritis or nerve trunk tenderness has disappeared, the improving stage has arrived, and at this time a survey of damage done should be recorded. This test is quite standard and all well trained physiotherapists are familiar and can well classify damaged muscles as follows:

1. Gone.
2. Trace, a flicker of muscle contraction.
3. Poor, can move part with gravity removed.
4. Weak, can contract against gravity.
5. Fair, contracts against gravity and take some resistance.
6. Strong, muscles contract and stretch near normal.

A physician also may be able to make such an examination and keep record through the improving stage which will occupy the next two years.

During the improving stage, treatment should be exact and properly carried out and may be discussed under the following headings:

1. Apparatus should be light, simple, protect the muscles involved.
2. Muscle training must be advantageously carried out by physiotherapist, but can be used in the home by properly instructed parents.
3. Massage and manipulation improves circulation. Muscle tone improved and tissue warmed through friction.
4. Exercise and hydrotherapy should be under instruction and is very apt to be overdone and

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abused. Over exercise is more harmful than no exericse at all.

5. Heat—Warm Clothing. Outside heat to restore temperature of affected parts at least once daily and warm and extra clothing to prevent chilling of limbs.

6. Operations—Only very simple operations correcting deformity are to be advised during this stage.

7. Electric stimulation used only by competent physiotherapist or physician are impractical in children under age of ten.

Surgical or reconstruction age begins only after improvement is at a standstill and usually not until at least two years after date of onset. During the past twenty years and especially since the late war, advancement in treatment through surgery has steadily advanced. Many of the former procedures have been found wanting and not permanent and lasting. The great number of operations have been reduced so that standard procedures are quite universal and vary depending on the extent and location of damage done; however, any permanent surgical procedure should not be entertained until careful consideration of damaged parts, and the procedure will without question help the damaged parts and do so permanently. Operations have of late been greatly confined to the bony skeleton and joints, although certain tendon and muscle operations are still in vogue, especially when aided by stabilization of adjoining joints.

Operations may be discussed as:

1. Operations on joints.
2. Operations on bones.
3. Operations on tendons.
4. Operations on muscles.
5. Foreign material.

Lantern slides were shown and following operations were discussed:

Operation on shoulder.

1. Arthrodesis—Bruce Gill method, satisfactory operation in that it produces ankylosis.

Operation on elbow.

2. Transference of muscles of inner condyle to point higher on humerus for weak or paralyzed bicep. Slides were shown of operations for the hand, flail wrist and arthrodesis. Upper extremity because of many fine motions does not lend itself to operation as well as lower extremity.

3. Flail wrist—silk ligament operations fixation with fascia lata and certain tendon transferences. Slab of tibia placed over denuded lower end of the radius and small bones of the wrist with wrist slightly hyperextended, is one of the very best methods to produce arthrodesis at the wrist.

4. Spine—correction deformity of the spine, forced manipulation followed by bone grafts of various types.

5. Abdomen—supporting of abdomen with fascia strips.

6. Hip—operations about the hip, first of ankylosis; extra articular fusion has proved satisfactory in infantile cases. Correction of deformity of the hip, operations of Soutter and Campbell were described as standard procedures for gaining stability at the knee.

7. Knee—patellar bone block, arthrodesis, and tendon transference are the standard procedures used, and these were discussed in full.

8. Foot—deformities corrected by bony operations. For better balance of muscles present, tendon transference used, usually combined with some bony fixation of the subastragular joints. Astragalectomy, Hoke, triple arthrodesis with bone block were all shown and described as stable operations.

9. Leg lengthening and leg shortening shown as procedures to be considered in balancing inequality of length of limbs.

A CASE OF TROPHONEUROTIC GANGRENE OF THE EXTREMITY FOLLOWING SPINAL ANESTHESIA

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TODAY the clinician is constantly reading reports on the value of spinal anesthesia and statistics are submitted covering its use in thousands of cases until one feels it is the method par excellence. Little has been said regarding any complications except a fall in blood pressure and respiratory failure, which are successfully combated by a Trendelenburg position and ephedrin.

However, if one searches the literature, we find as early as 1906, E. Goldman, of Leipzig, reporting a case of gangrene of the extremities following spinal anesthesia. Bilancioni reported three similar cases in 1909 except the gangrene was over the sacrum. In 1921, E. E. Pribram, in a case report, describes a similar condition but does not comment on it. In 1924, P. Klein reports nine cases of trophoneurotic disturbances following spinal anesthesia and submits reports on animal experimentation along this line. Eva Schmidt re-

ported three cases in 1927. D. E. Centanaro reported one case in 1930.

Spinal anesthesia has won its place in surgery and is a worthy method, yet I feel we should not allow our enthusiasm for a procedure to cause us to overlook any complication that may develop and report it as such.

Report of Case

T. A., age 23, laborer, married two years, weight, 165 average, height five feet, 11½ inches.

Family history: Father killed accidentally on farm; mother living and well; one brother living and well; two sisters living and well. None dead. Wife living and well; no children.

Past history: General health was excellent until March 1, 1931, when he developed a severe nephritis while working in a smelter at Great Falls, Montana. He was under a physician's care at Great Falls until early spring when he took a job building trails in Glacier National Park. His general condition improved during the summer and he felt fine. His habits are average. He smokes and takes an occasional drink, though he states he never has drunk to excess. He does not use drugs. He has always lived in Montana or across the line in Canada.

Past illnesses: Measles at age of nine years. Lobar pneumonia, 1918, and again in 1919. No other illness until he had acute nephritis in March, 1931, the cause of which he never knew. Fractured tibia, middle one-third right leg, in 1924. Healed without complications and without deformity.

Present illness followed an operation for acute appendicitis, March 31, 1932, at a neighboring city in Montana, where he was hospitalized for 18 days. I received the following report from his surgeon when he came under my care April 22, 1932:

"Mr. T. A. was brought here complaining of a pain in the right lower iliac region which he had noticed, off and on, mildly for several days, but which had become acute in the previous 24 hours. We decided he had a mild attack of acute appendicitis. When we examined his urine we found that it boiled solid with albumin. Taking his blood pressure it was found to be 190 systolic over 150 diastolic. White blood cell count was 14,400. Further questioning brought out that he had albuminuria and high blood pressure a year ago and was treated for four or five weeks, but for several months had ignored his condition.

"We felt it was imperative to remove his appendix, it being impossible to tell just how badly it would behave in the presence of a uremia, so we removed it under spinal anesthesia. The distal third only was affected, the mucous membrane showing punctate hemorrhages and a mild inflammation.

"Two or three days later he complained of severe pain in his left calf and was treated with heat and epsom salts fomentations and gradually the pain subsided. Then the right leg became affected and this time the toes became blue and the patches which you still find gangrenous in the skin showed up and went on to a dry gangrene. We ascribed it to his hypertension and uremia with thrombosis of the terminal arterial branches."

The patient gave me the following description: The second day after his operation he felt like he had his left leg in a furnace, "burning up" from the knee down to the ankle. He was treated as described, except he states the toes of his foot became dark colored. His mother corroborates this. This lasted three days when the pain became much easier but did not cease entirely. Even now once in a while he has sharp, shooting pains in this leg, and his toes still have a peculiar blue cyanotic appearance about their ends especially about the nails. April 6th, pain of a burning character started in his right leg and felt like he had this leg in a furnace "burning up" from the knee down to the ankle. Two days later the toes were dusky and a mottled appearance spread up over the foot and over the entire lower leg. April 9th, the toes became black on the right foot and black areas occurred over the right first metatarsal posteriorly from the great toe and over an area on the calf of this leg and a small area on heel. These patches went on to a dry gangrene.



General examination: Patient, a young adult male, white race, resting quietly in bed. He is emaciated and has the pallor one associates with a wasting disease. He shows no evidence of suffering.

His head is well formed, hair abundant, clean and of fine texture; eyes bright; sclera pale: pupils equal, regular and react to light and accommodation; nose: septum deviates slightly to the right; sinuses are clear to transillumination; ears normal; hearing good. Mouth clean, teeth in good condition although he has had several extractions. Tonsils have been removed (1930). Neck: no tumors; thyroid not enlarged but the carotids are throbbing at the rate of about 120 per minute. Chest ribs distinct, expansion equal and regular, no areas of dullness, no adventitious sound heard over lungs. No tumors noted. Heart rate, 120—apex beat sixth interspace anterior axillary line. No irregularity; mitral insufficiency murmur. Patient states he is short of breath on the least exertion. Abdomen thin, no masses felt, no areas of tenderness, no muscle rigidity; there is a scar over McBurney's area. It is well healed and shows no evidence of anything but union per primum. This is evidently the scar of his recent operation, and is in good condition. Bowels are regular. Skin is clean and healthy although his color is pale. Upper extremities are normal. Lower extremities are thin and wasted in appearance.

The left leg movement, reflexes and sensations are normal, although about the toes, particularly around the toe nails, one sees a peculiar mottled-purple discoloration. This is not marked but more of a light cyanotic condition.

The right leg shows gangrene of all the toes, a patch of gangrene on the heel and along the outer edge of the foot. A small gangrenous area over the external maleolus and on the calf of the leg. There is also an area of gangrene on the inner side of the foot extending from the base of the great toe back along the metatarsal. The pictures illustrate these areas. Part of the discoloration of the skin is due to mercurochrome which the patient has been using, but this is readily distinguished from the sharply marginated, black, leathery gangrene. The remainder of the leg is normal.



Laboratory findings: Blood pressure at present time, 190 systolic, 150 diastolic. Urine: albumin four plus, many hyaline and granular casts, amorphous urates, occasional white blood cell, specific gravity, 1022, acid reaction, clear straw color, no sugar, no acetone. Blood Wassermann is negative. May 15, 1932: Present condition the same as when seen April 22, 1932. Was unable to weigh the patient as he is confined to his bed at his home and is not under my care at present. Prognosis is grave. June 1, 1932: Right leg amputated above the knee healed per primum? May 23, 1933: Death due to myocardial insufficiency, myocarditis and nephritis.

Conclusions

1. Trophoneurotic gangrene of the extremity following spinal anesthesia is a rare complication yet one that clinicians should be on the watch for.

2. This case is not reported to discredit spinal anesthesia, but rather to add this to the few already reported cases and to call the attention of clinicians to this condition.

3. Animal experimentations prove that an injury of a sensory root produces a trophic disturbance.

4. Poor quality of medicinal substances or technical errors and injuries of the cauda are rejected as etiological factors, since the latter would also have to make their appearance following lumbar puncture without injection, which, however, is not the case.

5. Toxic lesions of the nerve elements form a more logical conclusion as to etiology, possibly dependent on an idiosyncrasy of the patient.

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SIGNIFICANCE OF ENLARGED LYMPHOID STRUCTURES IN INFANTS AND CHILDREN*

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IN a consideration of the lymphoid structures of young children there are certain facts and viewpoints which are helpful and which it would appear are worthy of special discussion. This has been suggested by the observation that

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the lymphoid structures of infants and children, both in health and in disease, exhibit peculiarities that at times are either ignored or misinterpreted.

For a clearer conception of the pathologic conditions of the lymphoid structures of infants and children it is necessary to appreciate the normal differences that exist in young as compared with older individuals. At birth, as Scammon and others have shown, the amount of lymphoid tissue in the body is relatively large. Of equal, if not more importance, is the fact that the amount of lymphoid tissue increases up to a maximum at ten years of age, after which time it decreases until 40 years of age. These two facts serve to explain a number of observations which are made frequently, and the significance of which may often not be clear.

First, the ease of palpability of lymph nodes in children may erroneously be ascribed to pathologic enlargement. It should be recognized that even in a newly born infant, lymph nodes may be palpable in some regions of the body, but by the time the child is two years of age, the superficial lymph nodes may be palpable in most of their normal situations. Not only is this relatively large size of lymph nodes evident in the superficial groups, but those situated internally have also given cause for remark and even concern. It is not an infrequent occurrence for a surgeon to surmise that the plump, mesenteric and abdominal lymph nodes, solitary follicles of the colon, and Peyer's patches in the ileum are the seat of disease when they are observed during the course of a laparotomy for some condition not associated with enlargement of lymph nodes. In most such instances, the size of the lymph nodes and follicles is attributable to the age of the individual rather than to pathologic change.

In a similar manner is to be explained the bugaboo of the enlarged thymus. The weight and proportions of this organ follow closely the curve of growth and atrophy of the lymphoid structures in general. At birth the thymus weighs about 15 gm., and it continues to grow until it weighs 30 gm. or more. At about the age of puberty it begins to undergo the changes characteristic of the adult organ. The diagnosis of "enlarged" or "persistent" thymus, with or without symptoms and signs of obstruction in the respiratory tract such as stridor and dyspnea, or of eczema, pyloric stenosis, and spasm, or of convulsions, is, in our experience at the clinic, without foundation. It is recognized that the thymus may account for a shadow in the upper mediastinum, as seen in a roentgenogram of the thorax, but this is not considered a cause for concern; neither is it to be taken as an indication for the preoperative roentgen treatment of infants and children for whom surgical treatment is contemplated.

Thus it must be recognized that in infants and children a greater prominence of the lymphoid structures is normally to be expected, and that the criteria for judging enlargement of these structures must be altered in a consideration of health or disease in the young.

Diseases of the Lymph Nodes

Enlarged lymph nodes will come to the physician's attention either because of a specific complaint of swelling or mass, or they will be discovered during the course of examination for some condition of which lymphadenopathy is a feature. In infants and children, enlargement of certain nodes or groups of nodes occurs with especial frequency and will be the occasion for consulting a physician. Whether such enlargement represents the chief complaint, or whether it is found incidentally, a definite diagnostic procedure is indicated.

Of prime importance is the determination of the duration of the enlargement. Enlargement of short duration, that is, one which is a matter of a few days or a week or two, probably indicates an acute process, usually explained by acute inflammation in regions drained by the nodes. Enlargement of longer duration suggests chronic inflammation or primary disease of the lymphatic structures.

Acute Lymphadenitis—In a consideration of acute adenitis in children, the lymph nodes of the head, and especially those of the neck, deserve the greatest share of attention, since they are the seat of more than 90 per cent of acute inflammatory diseases of the lymphoid structures. Acute cervical lymphadenitis, which appears and subsides during the course of tonsillitis, scarlet fever, and the other infectious fevers, stomatitis, dental eruptions and infections, and superficial infections of the scalp and infections of the ear, may be considered as an incidental phenomenon and requires slight special attention. On the other hand acute cervical adenitis, in which enlargement, tenderness, and fever persist beyond the duration of the primary infection, or acute cervical adenitis that starts with minimal or no marked primary focus, often presents a problem to parents and physician.

In addition to local enlargement and tenderness, fever, irritability, restlessness, malaise, and anorexia may persist for many days. In fact, it is wise in these cases to anticipate a period of

illness lasting up to three or four weeks, and it is usually an extremely judicious measure to so advise the parents. Such preliminary warning will many times avoid days of anxiety which result from the expectation that the disease process should be of short duration.

In cases in which excessive enlargement persists, suppuration of the involved node or nodes becomes a prominent possibility. In the event that suppuration does occur, premature surgical drainage is to be avoided. Application of local heat should be continued until the wall of the abscess has involved the skin, and frequently until spontaneous opening of the abscess appears imminent. If this course is pursued, a small incision, opening of accessory pockets, and insertion of a tube will result in complete drainage. The period of convalescence will be short and the necessity for repeated incisions will be obviated.

The same principles apply in cases of acute lymphadenitis in other parts of the body. Needless to say, the primary focus, from which the lymph nodes receive the infection, requires proper treatment. Tonsillectomy even in the chronic stage of lymphadenitis may keep the lymph nodes from suppurating.

Another extremely important type of acute inflammation of lymphoid tissue peculiar to the young child is retropharyngeal abscess. In the so-called retropharyngeal space which lies between the mucosa of the posterior wall of the pharynx and the spinal column there are situated a number of small lymph nodes. When these become infected through the overlying tissues an abscess may form. There may at first be nothing but the general signs of infection, such as fever, malaise, and leukocytosis. But as a node enlarges, it tends to project forward and obliterate the pharyngeal space, thus by pressure on the epiglottis and larynx causing stridor, dyspnea, and dysphonia, or by displacing the palate, dysphagia. The child may lie with the head thrown back in an effort to compensate for encroachment on the respiratory space. Not infrequently, a lymph node in the upper posterior triangle of the neck assumes a considerable size and becomes tender. Though also of considerable size, the abscess may not be evident on inspection of the pharnyx. However, in any case in which the slightest suspicion is aroused by any of the foregoing symptoms, gentle digital examination of the posterior wall of the pharynx, above and below the portion that can be seen by inspection, should be made. If the abscess is discovered, incision and drainage, with the head of the child lowered, should be carried out. Spontaneous rupture should by all means be prevented in order to overcome the possibility of aspiration of the contents of the abscess and resultant aspiration pneumonia.

Chronic Cervical Adenitis—Chronic cervical adenitis in children brings up two chief problems for consideration. In the first place the nodes may remain considerably enlarged because of the presence of chronically infected tonsils or adenoids, or both. In the absence of contraindications, tonsillectomy and adenoidectomy should be carried out. The enlarged lymph nodes in such cases seldom exhibit any appreciable degree of tenderness.

In any case of very slowly progressive enlargement of the cervical lymph nodes tuberculosis must be suspected. Routine application of the tuberculin test will in some cases rule out the possible tuberculous nature of the enlargement, and in other cases it will be practically sufficient to establish the diagnosis. Occasionally an enlarged lymph node will be removed for biopsy and tuberculosis will be found to be present. However, the present view is that if the evidence is sufficient to support the diagnosis of tuberculosis, surgical measures are to be avoided and the child should be submitted to the accepted regimen for the treatment of tuberculosis, that is, rest, proper diet, heliotherapy and, if obtainable, radium or roentgen therapy.

Primary Disease of Lymph Nodes—Primary diseases of the lymphoid structures of children are referred to collectively as lymphoblastomas. Though there is still some controversy regarding their identity, Hodgkin's disease and lymphosarcoma (not of the Hodgkin's type) are described. Undoubtedly examples are found which support such a view, though in many instances both the clinician and pathologist have great difficulty in classifying cases according to any term more specific than lymphoblastoma.

In cases in which there develops a gradual painless enlargement of a lymph node, or more usually, of a group of lymph nodes, Hodgkin's disease or lymphosarcoma should be considered as the condition likely to be present. Most frequently the cervical nodes on one side are affected. There are cases, however, in which both sides are involved from the beginning and, furthermore, in some cases, lymph nodes in more than one situation may be affected from the onset. Enlargement of the superficial nodes is evident to the eye. Enlarged nodes in the thorax and abdomen may make their presence felt by signs produced as a result of encroachment on adjacent struc-

tures: Those in the mediastinum may cause cough or dyspnea; those in the abdomen may give rise to discomfort or signs of partial or complete obstruction of the intestine, ureters, and bile passages, and they may be palpable and sometimes form visible masses.

A very helpful diagnostic point in the recognition of Hodgkin's disease or lymphosarcoma is the peculiar soft feel of the tissues about the enlarged nodes. The impression is often obtained of a firm mass or masses suspended in a surrounding medium which is of almost gelatinous consistency. At times a mass of enlarged nodes may feel very much as would a mass of soft rubber of similar size. While Hodgkin's disease at its onset tends to affect only a single group, or two or three groups, of nodes, lymphosarcoma in general tends to involve numerous groups of nodes.

The ultimate diagnosis rests on microscopic examination of a node. However, both conditions are so highly radiosensitive that the response to radiotherapy is sufficient to distinguish them from other types of adenopathy. Within a few days after treatment a lymphoblastomatous node will have been so reduced in size as to be difficult to distinguish from the normal.

In leukemia, in the majority of cases, rather slow and painless general enlargement of lymph nodes also occurs. Mills, in a study of 60 cases of acute lymphatic leukemia in infants and children, found enlargement of lymph nodes in all of them. Such attendant symptoms as splenomegaly, pallor and weakness, and hemorrhage that occur in leukemia should give a strong hint as to the cause of enlargement of the lymph nodes. Examination of the blood smear will in most cases clear up the diagnosis.

It must be borne in mind that, at times, even in children, enlarged lymph nodes may be the only evident sign of carcinoma in adjacent organs. In two cases encountered at the Mayo Clinic, children were admitted because of chronic, painless enlargement of the cervical lymph nodes. Biopsy revealed the presence of metastatic carcinomatous involvement, the primary source of which was found in the thyroid gland.

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HEMOLYTIC TRANSFUSION REACTION WITH DEATH*

MILTON ABRAMSON, M.D., Ph.D.
MINNEAPOLIS

THERE are a number of landmarks that stand out historically in the development of the practice of blood transfusion. The most important of these contributions are as follows:

1. The theory of the circulation of blood as announced by William Harvey in 1628.

2. The performance of the first blood transfusion on man by Jean Denys in 1667.

3. The discovery by Landsteiner and Shattock of the presence of iso-agglutinins in the blood in 1900.

4. The classification of human bloods into four groups by Jansky in 1907.

5. The use of citrate and glucose, and of citrate alone as an anti-coagulant by Hustin and Agôte in 1914.

6. The introduction of an improved syringe method of transfusion depending on the principle of a two-way stop cock by Unger in 1915.

It is interesting to note that even before the presence of iso-agglutinins in the blood was known, the various phenomena that we now recognize as attributable to the mixture of incompatible bloods were very vividly described. These phenomena are particularly hemoglobinuria, chills, fever, violent vomiting and diarrhea.

The division of bloods into four major groups is based on the supposition that there are only two iso-agglutinins and two iso-agglutinable substances present in blood. This assumption has been shown to be incomplete. Guthrie and Huck, in 1923, demonstrated the existence of a third iso-agglutinin and a third iso-agglutinogen. This may furnish an explanation for some of the post transfusion reactions that up to now were unexplainable, because with three iso-agglutinins and three iso-agglutinogens, 27 biologic combinations are possible. With this in mind we must consider as belonging to the same group only those bloods with the same iso-agglutinin and iso-agglutinogen content.

The principal types of reactions that may occur following transfusion are these:

1. Massive agglutination and hemolysis of either the recipient's or donor's cells.

2. An anaphylactic reaction.

*From the Obstetrical Service of the Maternity Hospital.

3. Citrate reactions.

4. Transmission of disease from donor to recipient or vice versa.

5. Multiple embolic phenomena.

The case that we are reporting falls into the first group, a reaction because of hemolysis of the blood cells. In order to avert this type of reaction, both donor and recipient must belong to the same blood group, and the bloods must further be proven to be compatible by direct matching. The universal donor should not be used for a recipient of a different blood group when this can be avoided.

The clinical picture following the use of an incompatible blood donor is more or less typical. Usually the reaction begins before the introduction of 100 c.c. of blood. The patient may complain of fullness in the head, precordial distress and often of severe lumbar pain. Gradually cyanosis and dyspnea develop; consciousness may be lost. The patient may develop an urticaria, and fever and chills are very often seen. The urine is bloody because of the presence of large amounts of hemoglobin. This hemoglobinuria is the result of the hemoglobinemia which follows the hemolysis of a large number of agglutinated red blood cells. If a full transfusion is given, death results in a few hours but when not more than 100 c.c. are given the patient may recover.

Post transfusion reactions have also been observed, due, apparently, to the development of iso-antibodies in the plasma of persons who had previously been transfused with compatible blood.

Astrowe reports a case of a baby 18 months old who was transfused, with no reaction, with 180 c.c. of blood from the mother previous to a mastoid operation. The transfusion was repeated in twenty days without regrouping the mother. The baby developed vomiting, cyanosis, coma and hemoglobinuria. There developed bleeding from the mastoid incision and from the mucus membranes of the mouth. This patient gradually recovered. A retest of the mother and child was done and the bloods were found to be incompatible.

Wildegans lists nine authors who have reported fatalities from transfusions in which both donor and recipient were of the same blood group.

Parr and Kuschner report the case of an incomplete abortion with a severe secondary anemia who was given a direct transfusion. Following the injection of 200 c.c. of blood the patient developed vertigo, nausea and a flushed face. These symptoms were erroneously interpreted as of nervous origin and the transfusion was completed. By this time there was a bright red flush over the entire body of the patient. There was also dyspnea, edema of arms and lips, weak pulse and cyanosis. One and one-half hours after transfusion the patient began to bleed from the prick of the transfusion needle. She vomited a blood-stained mucus, there was dark venous bleeding from the vagina and a bloody urine. Death occurred four and one-half hours after transfusion from circulatory failure.

Levine and Segall report a reaction following the use of a donor for the second time in the same patient without regrouping. Five hundred cubic centimeters of blood were given. This was followed by a severe chill and a fever of 105 degrees. There was cyanosis, dyspnea, and a weak pulse. The patient vomited a blood-stained mucus, and complained of severe pain in the lumbar region. There was blood oozing from the mucus membranes of the mouth and gums. Seven hours later the patient vomited a dull red fluid and clotted blood. There was hemorrhage from the rectum and vagina and a bloody urine. These symptoms continued for five days, suddenly ceased and the patient recovered.

Case Report

The case that we are reporting is that of a white female, age 24, gravida 2 para 1, who was first seen on March 22, 1935.

Family history was negative.

Menstrual history, negative. L. M. P., July 15, 1934. Expected confinement, April 22, 1935. Patient stated that she had had an anemia with her previous pregnancy. Measurements, Wassermann and smears were negative. On March 29, the general physical examination was found to be negative. The fundus was three fingers below the xiphoid, the head was presenting, and the fetal heart rate was 140. On April 12 the hemoglobin was found to be 34 per cent and the patient was told to come in to the hospital for blood studies, grouping and treatment.

April 14, the patient was admitted to the hospital. Blood studies indicated a severe secondary anemia. The patient was found to be in group I and the husband in group II. There was no agglutination on cross grouping.

On April 16, at 6 p. m., an indirect citrate transfusion was started using the husband as a donor. After about 100 c.c. of blood were injected the patient complained of a heavy feeling in the chest, dyspnea, nausea, diarrhea, numb feeling over entire body, and emesis of a blood-

stained mucus. The stools were frequent, loose and black in color. Pulse was 68 and respiration 16. The transfusion was discontinued for about one half hour, and then, not realizing the gravity of the symptoms, was started again. After about 75 c.c. of blood were given the patient became very weak, fingernails were cyanotic, there was dyspnea and a weak pulse. Patient coughed frequently and again vomited a blood-streaked mucus. The transfusion was then discontinued entirely.

At 9 p. m. temperature was 101.8 degrees, pulse, 112, respiration, 24, and patient was beginning to have labor pains. There was a moderate amount of vaginal bleeding. At 10:30 p. m., patient was still bleeding moderately from vagina, there was bleeding from the gums, and roof of the mouth. It was also noted at this time that the patient had started to bleed from a prick in the ear that had been made the day before for a sample of blood for grouping.

At 11:11 p. m., the patient was delivered of a stillborn female infant, R. O. A. position. A flooding hemorrhage immediately followed, the placenta was expressed and the usual measures were taken to stop the bleeding, including pituitrin and uterine massage.

When I first saw this patient at 11:50 p. m., there had already been a marked blood loss, bleeding was continuous from the mucus membranes of the mouth, from the prick in the ear, from the needle punctures incident to the introduction of fluids by vein and from the vaginal mucosa and uterus. Despite vigorous uterine massage and a tight utero-vaginal pack with definite uterine contraction, the bleeding continued. An interesting observation made was that the blood vessel walls were apparently permeable to the fluid injected since it was noted that as the intravenous solution ran into the veins it seemed to seep out immediately through the vein walls. Despite various restorative measures applied the patient died at 12:15 a. m. Because of the very rapid progress of this case it was impossible to do further blood studies. The blood that was collected in the pans as a result of this massive hemorrhage showed no evidence of clotting after three hours.

Hemolytic transfusion reaction with death due to exsanguination.

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BOOK NOTICE

A TEXT FOR THE GENERAL PRACTITIONER

Modern Office and General Practice, by DEAN R. BRENGLE, M.D.; first edition, heavy cloth, 318 pages; Kingsport, Tennessee: The Southern Publishers, Inc.: 1935. Price, $3.25 (postpaid of the author, 1057 Highland Avenue, Detroit, Michigan).

The author of this book is a general practitioner who was graduated from the medical department of the University of Illinois in 1914, served an internship in what is now Ancker Hospital, St. Paul, took locum tenencies in Minnesota and the Dakotas during most of the following year and then settled in Detroit, where he has remained continuously since, with the exception of about fifteen months spent on active duty with the Naval Reserves during the war. The book is the result of his experience as a general practitioner during this entire period.

It is surely not intended, nor should it be used, as a substitute for the accepted, standard text books on general medicine; but as a supplementary volume to any of these, to be used for ready reference and as a quick reminder it should prove very useful indeed. It is, in its way, a scientific handbook, for its ideas throughout are based on the best knowledge we have; but necessarily, in 318 pages, some of which are devoted to collateral subjects, there must be much condensation at the expense of important detail.

The book will be greatly improved if, before the next edition appears, it is carefully gone over to eliminate the numerous grammatical and typographical errors which at present mar the appearance of what is, of its type, a very good book.

GILBERT COTTAM.

NUTRITION IN PEDIATRICS

Nutrition Work With Children, by LYDIA J. ROBERTS, Ph.B., M.S., Ph.D.; 3rd edition, dark blue cloth, gold-stamped, 622 pages plus index; Chicago: The University of Chicago Press: 1935. Price, $4.00.

Two professors at the University of Minnesota Medical School assisted in the preparation of this book by LYDIA JANE ROBERTS, Ph.D., who is professor of home economics and chairman of the department at the University of Chicago. The two Minnesota commentators were CLARENCE M. JACKSON, M.D., LL.D., professor of anatomy, and EDITH BOYD, A.B., M.D., assistant professor of anatomy, both of the medical school.

Professor ROBERTS has done a very good job of revision in this latest edition of a standard work on pediatrics, which was first published in 1927. Her evaluation of cases appears to be sound, from the evidence which she presents. Her inherent gravity and perspicacity are demonstrated by her statement: "We have not yet reached perfectly firm ground; old methods are being discarded, new ones are being tested; whether or not they will prove satisfactory only the future will show."

This book is too well-known to dictitians and pediatricians to be commented upon exhaustively here. It is sound, authoritative, and subdued in tone. It can be recommended.

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"WILLFUL DISTURBERS OF THE PEACE"

In the introduction to his book entitled, "Fifty Years a Surgeon," R. T. Morris says: "Changes that amount to a revolution in medicine as a whole date back little more than fifty years to include among their earlier moving spirits, Pastuer, Virchow, Ludwig, Cohnheim, Hueppe, Fluegge, Neisser, Rosenbach, Roux, Calmette, Koch, and Ehrlich, most of whom are now gone. All of these men who were letting down the bars and opening the fields of a new era in civilization were looked upon as being willful disturbers of the peace, intent upon foisting fanciful theories upon a so-called safe and sane audience of savants."

The physician who has a new idea, with sufficient scientific evidence to convince him that he is right, should take advantage of every opportunity to develop it regardless of its newness or how contrary it may seem to prevailing opinion. Seashore says: "If you have a new idea do not stop to count noses of your supporters. The trail of progress is never blazed by majority opinion." (Sigma XI Quarterly, vol. XX, December 1932, p. 156). Those who have blazed trails have been men and women with the courage of their convictions. They have had no hesitancy in freely expressing their views and reporting in the literature the results of their scientific work. Although many of them knew that to press forward meant discouragement and opposition, they were willing to make this sacrifice in order to advance knowledge and make of the world a safer and more comfortable place for future generations.

A good many of these "disturbers of the peace" did not live to see the facts they had established generally accepted. The above statements by Morris should be a warning to all present-day physicians who have a tendency to look upon their opinions and beliefs as infallible and, therefore, to ignore or bitterly condemn any one who has developed opposing views on the basis of actual observations and scientific work. There are now enough instances in the history of medicine to convince anyone that opposition to true scientific work is futile; that facts so established cannot be broken down by opinion and that those who oppose them ultimately go down in defeat.

J. A. M.

DOCTOR'S DEMANDS HEEDED

Mexico for the Mexicans, China for the Chinese and Ethiopia for the Ethiopians have become slogans of people whose natural wealth and resources have been sought and exploited by aggressive and greedy foreigners.

In like manner, our own profession is now strongly demanding that the practice of medicine be returned to it and no longer violated by rapacious pretenders. Up to the present time we have made little resistance to the invasion of our fields by others but there is an ominous awakening that forbodes a change.

While ridiculing the *mañana* of Mexico, the fatalism of China and the *laissez faire* of darkest Africa have not we too been sitting idly by permitting things to happen—all sorts and manner of things that we now realize should have concerned us very much. Perhaps it seemed a trifle unethical to assert ourselves in our own behalf; or did we think it inelegant to have keep-off-the-grass signs posted about us here and there? Well, at any rate, shoe clerks, beauticians and many welfare workers have trespassed and penetrated within the very temple of healing. They boldly cast lots, donned our garments and assumed the prerogatives of physicians.

Only a few years ago, no medical society had a legislative committee. Now we have learned to look upon it as necessary and most valuable. We have begun to drive the money changers out by legislative enactment and well directed enforcement. We are beginning to have something to say about the appointments of health officers and hospital superintendents. Vaccinations are being redirected to the family physician and why? Because the profession demands the right that only licensed physicians shall practice medicine.

A. E. H.

LYMPHOGRANULOMA INGUINALE

In the August, 1935, issue of the pamphlet entitled Venereal Disease Information, published by the United States Public Health Service and which we have commented on editorially elsewhere in THE JOURNAL-LANCET, is a very timely and useful editorial dealing with the above disease, sometimes called Poradenitis. This is a disease which, the writer states, has been unhesitatingly classified as a venereal disease by the majority of the authors who have dealt with it, and yet, in his opinion, to prove that it is a specific disease would require more evidence than we have at present. Occasionally the Frei antigen gives a negative reaction, although the clinical and histologic findings are characteristic of the disease. Patients appear with this disease who have been at sea for weeks, which would preclude sexual exposure. Married patients, some of whose statements must be considered reliable, deny extramarital exposure of either party. He states further that hyperplastic lymphadenitis occurring in other parts of the body besides the inguinal region may reveal the same surgical pathology as the glands from the groin and that he himself has personal knowledge of one patient with hyperplastic cervical adenitis who gave a strong reaction to the Frei antigen, without scars, venereal history, or objective evidence of former lymphadenopathy in that patient.

Coming from a conservative source like this, with ample opportunity for clinical observation under favorable conditions, statements like these may well make us hesitate before accepting without reservation the classification of this condition as the Sixth Venereal Disease, as set forth by the English writer Stannus in his book with that title. We need, as the editorial in question states, much more evidence than is at present at hand, before establishing it definitely either as a venereal or a non-venereal disease.

G. C.

Edward Starr Judd

The death of Starr Judd, as he was known to his friends and associates, has brought to an end a most unusual and interesting career. Born and brought up in Rochester when it was only a little village, in unpretentious surroundings and of humble parentage, there was nothing in his earlier years to suggest that he might develop into important leadership and make for himself in his quiet way a name that would be carried in great renown to the uttermost parts of the earth. Always restrained and unassuming, yet keen and alert, quick in the up take, competent and self-reliant in all his undertakings he was an example and an inspiration to his associates and his patients and his friendships were only limited by his contacts. Living and working in Rochester all his life he saw it grow from the obscure hamlet in which he was born to be the site of the most important and widely known group effort in the history of medicine. The Mayo Clinic owes much to him, for in the thirty-three years of his professional career he was one of its most valued and useful members. The Fellows who served there owe much to him, for he was a real teacher to them and through the opportunity of working under and with him a new generation of trained surgeons has gone out over the land. All medicine is indebted to him. Watching him in the operating room was a post graduate course to surgeons from everywhere and from the richness of his experience he spoke and wrote freely and clearly. He took an active interest in the organization of his profession, properly signalized in due time by his election, without any effort or even foreknowledge on his part, to the presidency of the American Medical Association.

It is safe to say that no more skilful surgeon ever lived and with this superlative flair of dexterity was combined a rare degree of surgical judgment and a deep sense of human understanding. He did it all so quietly and unobtrusively. Dramatic glamour meant nothing whatever to him and he operated in the same painstaking, efficient way whether Moynihan or Dawson were looking on or merely a roomful of everyday doctors and students.

He died as he had lived, simply and quietly. Overtaken by serious, acute disease while travelling east with Mrs. Judd to spend a few days with their children in college he was spared the thing he would have most disliked: a long, tedious illness with worry and discomfort to others and a lot of racking publicity. Only his immediate intimates were aware of his illness until the end came within the week and we then learned of it through the newspapers.

The little Episcopal church at Rochester could hold but a tithe of those who would have attended, but those it contained were all people who had known and loved him, whether they went there in an official capacity or not. The impersonal ritual of the burial service of the Book of Common Prayer, without even the adornment of music, seemed especially fitting for the earthly farewell to a man of his type, the last in the world to have wanted anything like pomp or display for himself.

In medicine we must depend largely on imponderables for the perpetuation of our ideals. The painter leaves his canvases, the sculptor his marbles, the writer his books and the musician his scores and his records. If a lawyer becomes an eminent judge, his decisions survive and if a clergyman reaches fame, his sermons endure. In almost every other important walk of life something tangible persists to preserve the footprints of people who have led worthwhile lives. With a surgeon it is different. He may leave important contributions to the literature of his craft and he may have made substantial additions to the sum total of our knowledge but the real evidence of his attainments disappears when his hand is stayed by death. In Starr Judd's case his marvellous mind, his consummate skill and his self effacing charm of personality are gone, but still there is much to show for them. An influence like his must have found fertile soil in the minds of the many earnest individuals who came within the scope of his activities throughout the years and the good will have been accomplished even though unmarked by stone or brass. More than that, he left an indelible impression for good on everyone who knew him and countless thousands who did not will reap the benefit of his career for a long time to come.

GILBERT COTTAM



SOUTH DAKOTA HEALTH OFFICERS' ASSOCIATION

Annual Meeting, Huron, S. D.

The recent meeting of the South Dakota Health Officers' Association was held at Huron, S. D., and was called to order by the president of the association, Dr. J. B. Vaughn, Castlewood. After various sundry activities in the morning prior to the call-to-order, Dr. N. W. Stewart, Lead, delivered an address on "The Allied Professions." Dr. Stewart is president-elect of the association.

Following the address by Dr. Stewart, a second one was heard, delivered by Dr. Albert C. McCowan, Washington, D. C., of the Children's Bureau of the U. S. Department of Labor. Dr. McCowan spoke in place of Dr. Martha Eliot, assistant chief of the Children's Bureau in Washington, and his subject was: "Maternal and Child Health Work in Relation to the Social Security Act"—an act which has now become Federal law. Dr. McCowan stressed the points that all benefits to be gained from the Social Security Act will depend upon the nature of the subordinate plans which the states put forth; the careful selection of personnel who are free from political ties; and the degree of co-operation which is achieved from all sources.

More than one hundred persons attended the luncheon. This luncheon was presided over by President Vaughn, and after the meal, short talks were given by Dr. P. W. Covington, Dr. Albert C. McCowan, Dr. J. C. Townsend, and Dr. P. B. Jenkins, who is superintendent of the South Dakota State Board of Health. Others who spoke briefly were Dr. A. S. Rider, president of the South Dakota State Medical Association; Mrs. H. H. Holdridge; L. A. Schofield, D.D.S., president of the South Dakota State Dental Association; Miss Agnes Thompson, president of the South Dakota State Nurses' Association, and superintendent of nurses at Luther Hospital in Watertown; the Reverend C. M. Austin, president of the South Dakota Hospital Association; E. E. Deets, Ph.D., professor of sociology at the University of South Dakota; Mrs. Florence Walker Englesby; and Mr. L. A. Daniels, of Aberdeen, representative of the South Dakota Pharmaceutical Association.

The luncheon adjourned at 2:00 p.m. in order to allow sufficient time for the business session of the afternoon, which was called to order by President Vaughn. The minutes of the last meeting were read by Dr. W. H. Griffith, Huron, secretary-treasurer, and were approved as read. Mr. W. W. Towne, sanitary engineer for the South Dakota State Board of Health then recounted the efforts of the Board in attempting to complete a project of the Works Progress Administration which would build sanitary privies in twenty-four counties of South Dakota.

Dr. John Foxton, Huron, first president of the association and one of its founders, spoke at the afternoon-session group; and Dr. William F. Bushnell, of Elk Point, who represented the economic committee, reported on the co-operation between the State Board of Health, the medical advisory committee of the South Dakota State Medical Association, and the South Dakota Health Officers' Association. He illustrated his report by means of a graph. His report was accepted, a motion to that effect proposed by Dr. Clarence Sherwood, of Madison.

The matter of an association page in THE JOURNAL-LANCET once each year was suggested by Dr. Bushnell, and Dr. Foxton supported him by proposing a motion that THE JOURNAL-LANCET be designated as the official publication of the South Dakota Health Officers' Association. This motion was carried. Dr. Griffith then read a communication from the Seventh District Medical Society which was in the form of a resolution concerning crippled children within the state; and upon motion by Dr. A. E. Bostrum, this resolution was referred to the committee on resolutions. The treasurer's report of Dr. Griffith was read and accepted.

Chief speaker of the afternoon's session was Dr. P. W. Covington, of Salt Lake City, Utah, who discussed "The History of Public Health Work and Administration." Dr. Covington has been engaged in public health work for twenty years. After this address, Dr. Bushnell proposed a vote of appreciation to Dr. Jenkins for his excellent work in securing these nationally-recognized speakers, and the motion was carried. Dr. C. A. Hunter, of the State Health Laboratory, Vermillion, gave a water analysis in which he was assisted by Mr. Towne, of the State Board of Health.

The Sioux Falls Chamber of Commerce invited members of the association to hold the 1936 meeting in Sioux Falls; but it was decided to allow the new officers to decide that matter. New officers elected were: Dr. W. F. Bushnell, Elk Point, president; Dr. C. E. Sherwood, Madison, vice-president; and Dr. B. A. Dyar, DeSmet, secretary-treasurer.

NEWS ITEMS

Dr. C. O. Wright, Luverne, Minn., was recently elected president of the Minnesota State Sanitary Board.

Dr. A. M. Jensen, Minneapolis, has moved to Brownton, Minn., and opened offices for general practice.

Dr. C. E. Lowe, Mobridge, S. D., is back at his office after several weeks' absence on a trip to California.

Dr. R. L. Smith, formerly of Harvey, is now located at Minot, N. D., where he will continue general practice.

Dr. R. P. Merrett, Kenmare, N. D., was instantly killed, the results of an automobile accident on November 25.

Mother St. Joseph, aged 78 years, founder of the hospital at Polson, Montana, passed away on November 25, after a short illness.

Dr. R. C. Webb was elected president of the medical staff of Asbury Hospital, Minneapolis, at its annual meeting held this month.

Contracts to the amount of $335,000 have been awarded for the construction of a new six story addition to the Insane hospital at Jamestown, N. D.

Dr. T. S. Soine has moved from Barnsville to Dassel, Minn., where he will continue general practice. Dr. Soine is a graduate of the University of Minnesota.

Dr. Wm. A. O'Brien, associate professor of pathology at the University of Minnesota, was married on Thanksgiving morning, to Miss Virginia M. Benton of Minneapolis.

Dr. Henry E. Dunham, physician and surgeon, who has been in active practice for over 40 years at Elgin, Minn., died on December 7, at the Minneapolis Masonic Home.

Wessington, S. D., which has been without the services of a doctor for several months, has secured Dr. R. R. Rice, formerly of Sioux Falls, who has already opened his offices.

Recommandation of an appropriation of some $400,000 for the Indian Tuberculosis Sanitorium to be located at Rapid City, S. D., is promised when Congress holds its next session.

Dr. O. A. Oredson, Duluth, died at St. Mary's hospital in that city last month after a long illness. Dr. Oredson was 64 years of age and had been in active practice in Duluth for over 30 years.

The twenty-fifth anniversary of the Woman's Auxiliary of the Hennepin County Medical Society, was held last month with Mr. G. T. Nordin, president of the auxiliary, presenting the address.

St. Johns Hospital, Helena, Montana, hope to have its building ready to receive patients before the close of the year, as work has been rushed day and night to complete the new building since the earthquake.

Dr. E. Starr Judd, chief of the surgical staff of the Mayo Clinic at Rochester, died in a Chicago hospital, after an illness of a few days of pneumonia. A sketch of Dr. Judd's life appears on another page of this issue.

Dr. Russell J. Moe, Duluth, has been elected president of the Minnesota Surgical Society, succeeding Dr. Waltman Walters of the Mayo Clinic at Rochester. Dr. Moe had formerly served the society as vice president.

Dr. P. A. Smith, one of the prominent physicians of Faribault, Minn., passed away last month, after a short illness. Dr. Smith had always taken an active part in medical, civic and political work in that city, and will be sadly missed.

Dr. K. F. Bascom, physician and surgeon, who has been connected with the Northwest clinic, Minot, N. D., is now located at Manhattan, Kan., where he will take over the surgical practice of Dr. L. A. MacFarlane, who died recently.

Dr. Fannie Dunn Quain, and Miss Helen Katen, Bismarck, president and secretary of the North Dakota Tuberculosis Association, were the principal speakers who recently addressed the women of Minot, N. D., on "Christmas Seal Sales."

At the annual meeting of the Renville County Medical Society, recently held at Fairfax, Minn., officers for the coming year were elected as follows: Dr. A. A. Passer, Olivia, president; Dr. R .C. Adams, Bird Island, vice president, and Dr. J. Dordal, Sacred Heart, secretary.

An attempt is being made at Akely, Minn., to secure a co-operative physician to locate in that village. The idea is that 200 families pay $10 each a year and in return they will receive the services of a competent physician whenever necessary at no extra cost except that needed for medicine and nurses.

The Minnesota Academy of Medicine held its November meeting at the Town and Country Club, St. Paul, with two interesting papers being

presented. Dr. Hendrie W. Grant, St. Paul, one on "Visual Field Contractions After Head Injury," the other, by Dr. Herbert Z. Giffin, Rochester, on "Hemorrhagic Purpura."

Dr. R. H. Beek, one of the pioneer physicians of Lakota, N. D., is seriously ill at his home in that city, with but little hopes for his recovery. Dr. Henry G. Woutat, who has been in active practice at Grand Forks, N. D., for over 35 years, passed away on November 27, after an illness of only two days. Dr. Woutat was a graduate of the University of Minnesota in 1897.

Dr. George E. Brown, 50 years old, who had been connected with the Mayo Clinic since 1921 and who had served as Mayo Foundation professor of medicine at the University of Minnesota, died last month in Rochester of pneumonia. Dr. Brown was a graduate of the University of Michigan, class of 1909, and had also studied at Johns Hopkins and Harvard Universities.

The monthly meeting of the Range Medical Society was held at Virginia, Minn., on Nov. 21. The speakers were Drs. J. R. Manley and Philip Bray of Duluth, who spoke on selected subjects in Obstetrics. Dr. B. S. Adams, Hibbing, gave a report of the recent meeting of the College of Surgeons at Los Angeles. Dr. S. S. Blacklock gave reminiscences of the life of the late Dr. F. W. Bullen of Hibbing.

Dr. Lottie G. Bigler, director of the child hygiene division of the South Dakota State Board of Health, died recently at Denver, Colo. She had been ill from complications following injury in a fall and had been on a month's leave from duty. Dr. Bigler, former practicing physician at Yankton and at Armour, S. D., was a prominent worker in the American Legion Auxiliary, the business and Professional Woman's club and various medical, social and fraternal clubs.

The Seventh District Medical Society was largely attended on the evening of December 10 at Sioux Falls and after a fine dinner was served, a program was presented that had been arranged by the educational bureau of the State Medical Society as follows: Higher Education and the Medical Profession," I. D. Weeks, President of S. D. U.; "Medical Education and the Medical Profession," J. C. Ohlmacher, M.D., Dean of Medicine, S. D. U.; "Immunity and Its Practical Application," C. A. Hunter, Ph.D., Dir. of Lab., S. D. U.

The annual meeting of the District Medical Society held at Yankton, S. D., on the evening of December 5 brought out a large attendance of its members. The new officers elected are: Dr. F. E. Williams, Wakonda, president; Dr. G. E. Johnson, Yankton, vice president, and Dr. J. A. Hohf, Yankton, secretary. Two guest speakers presented papers, Dr. S. A. Slater, Worthington, Minn., one on "Tuberculosis Test, Its Value and Significance," the other paper was by Dr. R. W. Larimer, Sioux City, Iowa, on "Adult Tuberculosis-Diagnosis."

The 29th annual Christmas seal campaign, sponsored by associated state and county units of the National Tuberculosis Association, 50 West 50th Street, in New York City, is now under way, and it is urged that physicians give as much aid to this great cause as is within their power. It is perhaps one of the loftiest movements under way in the United States, and it shares its distinction only with such organizations as the American Red Cross, the Federated Community Funds, etc. It has done more work in eradicating tuberculosis than any other similar group in history, and its work steadily progresses. The physician is perhaps the best-informed person in the country as to the evils of tuberculosis, and it is hoped that this knowledge of his will be passed on to others less cognizant of the fact.

Each winter brings a large number of deaths from gas poisoning. There were 1,694 of these deaths in 1934. Most of them, according to the Public Health Education Committee of the Minnesota State Medical Association, are deaths from carbon monoxide poisoning and could have been prevented with proper care. Accordingly the following precautions are emphasized by the committee as worthy of especial attention in Minnesota and the Dakotas: 1. Never run your motor in a closed garage. In spite of repeated warnings about that, an alarming number of deaths is still reported from this type of carelessness. 2. See that your motor is in good condition and that carbon monoxide gas is not seeping into the air of your closed car. Many accidents happen because the driver is dulled or sickened by a constant slight inhalation of carbon monoxide while he is driving. 3. See that the heating plant in your home, no matter what the type, has proper flues; that the pipes are in place and that you know how to run it to prevent half burned gases into ill ventilated rooms. Accidents involving heating plants are not confined to stove-heated homes. In 1934, nine Dartmouth college students lost their lives from carbon monoxide poisoning due to defective heating in their college dormitory.

LIST OF PHYSICIANS LICENSED BY THE MINNESOTA STATE BOARD OF MEDICAL EXAMINERS ON NOVEMBER 13, 1935

BY EXAMINATION

(October)

Name	School	Address
Baggenstoss, Archie Herbert	U. of Cincinnati, M.D., 1934	Mayo Clinic, Rochester, Minn.
Behrend, Albert	U. of Pennsylvania, M.D., 1932	Mayo Clinic, Rochester, Minn.
Boettner, Roland Buell	U. of Minn., M.B., 1934, M.D., 1935	Medical Center, Jersey City, N. J.
Carmichael, Francis Abbott, Jr.	U. of Pennsylvania, M.D., 1934	Mayo Clinic, Rochester, Minn.
Clark, Randolph Lee, Jr.	Med. Col. of Va., M.D., 1932	Mayo Clinic, Rochester, Minn.
Cook, Malcolm MacDonell	Emory U., M.D., 1933	Department of Pediatrics, U. of Minn., Minneapolis, Minn.
Cooper, Charles Cole	U. of Minn., M.B., 1932, M.D., 1935	322 Hamm Bldg., St. Paul, Minn.
Famiglietti, Edward Virgil	Johns Hopkins U., M.D., 1933	Mayo Clinic, Rochester, Minn.
Fisher, Isadore	U. of Minn., M.B., 1935	St. Mary's Hospital, Duluth, Minn.
Ganshorn, John Alexander	U. of Manitoba, M.D., 1932	Mayo Clinic, Rochester, Minn.
Gibson, William Roland	Stanford U., M.D., 1934	Mayo Clinic, Rochester, Minn.
Ginsberg, Maurice	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Goldstein, Moe	U. of Minn., M.B., 1934, M.D., 1935	Mayo Clinic, Rochester, Minn.
Good, Clarence Allen, Jr.	Washington U., M.D., 1933	Mayo Clinic, Rochester, Minn.
Gurney, Charles Ernest	U. of Nebr., M.D., 1930	Mayo Clinic, Rochester, Minn.
Hamlon, John Spencer	U. of Minn., M.B., 1935	Swedish Hospital, Minneapolis, Minn.
Jackman, Raymond Joseph	U. of Iowa, M.D., 1930	Mayo Clinic, Rochester, Minn.
Johnsrud, Luverne Wellington	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Juers, Arthur Louis	U. of Louisville, M.D., 1931	University Hospital, Minneapolis.
Junnila, Bruno Olaf	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Karlstrom, Arthur Elof	U. of Minn., M.B., 1935	University Hospital, Minneapolis.
Katzberg, Louis William	U. of Nebr., M.D., 1932	Fergus Falls, Minn.
Kemble, John William	Jefferson, M.D., 1933	Mayo Clinic, Rochester, Minn.
Kierland, Robert Richard	U. of Minn., M.B., 1932, M.D., 1933	Eitel Hospital, Minneapolis, Minn.
Layne, John Anthony	U. of Minn., M.B., 1934, M.D., 1935	University Hospital, Minneapolis.
Lewis, Everett Bryan	U. of Pa., M.D., 1933	Mayo Clinic, Rochester, Minn.
Lipscomb, William Rutledge	U. of Colo., M.D., 1932	Mayo Clinic, Rochester, Minn.
Logan, George Bryan	Harvard U., M.D., 1934	Mayo Clinic, Rochester, Minn.
Lord, George Alexander	Harvard U., M.D., 1934	Mayo Clinic, Rochester, Minn.
Montgomery, Thomas Robert	U. of Ore., M.D., 1932	Mayo Clinic, Rochester, Minn.
Morlock, Carl Grismore	U. of Western Ont., M.D., 1932	Mayo Clinic, Rochester, Minn.
Muccilli, Alfred Edward	U. of Minn., M.B., 1935	St. Mary's Hospital, Duluth, Minn.
Mullen, Simeon Anthony	U. of Minn., M.B., 1932	Wadena, Minn.
Nolan, Don Edwin	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Olson, Stuart Arnold	U. of Minn., M.B., 1935	University Hospital, Minneapolis.
Perozzi, Thelma	U. of Ore., M.D., 1933	Mayo Clinic, Rochester, Minn.
Pool, Thomas Lloyd	Northwestern, M.B., 1934, M.D., 1935	Mayo Clinic, Rochester, Minn.
Powell, William Nottingham	U. of Pa., M.D., 1931	Mayo Clinic, Rochester, Minn.
Ray, Robert Cassleman	Northwestern, M.B., 1931, M.D., 1932	Heron Lake, Minn.
Roy, Philemon Cheverton	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Sether, Arthur Fridtjof	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Shapiro, Phillip	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Stemsrud, Harold Lindell	U. of Minn., M.B., 1934, M.D., 1935	Pine City, Minn.
Stevenson, Clyde Alan	U. of Wis., M.D., 1934	Mayo Clinic, Rochester, Minn.
Winer, Julius Haskell	U. of Minn., M.B., 1935	Minneapolis General Hospital, Minneapolis, Minn.
Wolfram, Donald J.	Indiana U., M.D., 1934	Mayo Clinic, Rochester, Minn.
Yeager, Charles LeVant	Col. of Med. Evang., M.D., 1934	Mayo Clinic, Rochester, Minn.

BY RECIPROCITY

Clement, Walter Bertram	U. of Colo., M.D., 1934	422 Cherry St., Mankato, Minn.
Henthorne, John Charles	U. of Pittsburgh, M.D., 1931	Mayo Clinic, Rochester, Minn.
Roth, Frederick Daniel	Marquette U., M.D., 1933	Lewiston, Minn.
Weiss, Irving Joseph	Creighton U., M.D., 1931	Co. 4716, CCC, Big Fork, Minn.

NATIONAL BOARD

Ecker, Arthur David	Johns Hopkins, M.D., 1934	Mayo Clinic, Rochester, Minn.
Fritz, Wallace Lawrence	U. of Minn., M.B., 1934, M.D., 1935	1432 Osceola Ave., St. Paul, Minn.
Grimes, Burton Piper	U. of Minn., M.B., 1932, M.D., 1933	511 Medical Arts Bldg., Minneapolis.
Mason, James Anders	U. of Nebr., M.D., 1932	International Falls, Minn.
Nesselrod, Jerrold Peerman	Northwestern, M.B., 1929, M.D., 1930	Mayo Clinic, Rochester, Minn.
Tweedy, Robert Bruce	Marquette U., M.D., 1935	352 Main St., Winona, Minn.

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